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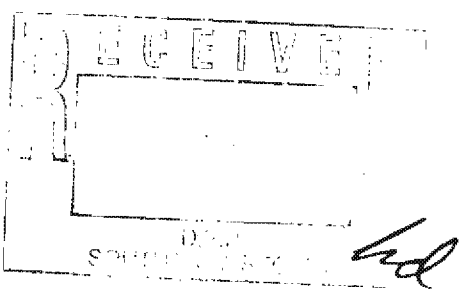
PHASE II COMPREHENSIVE SITE INVESTIGATION

American Auto Auction
93-123 Williams Street
North Dighton, Massachusetts
MADEP RTN #4-16565



Volume 1 of 2

Submitted to:

Massachusetts Department of Environmental Protection
Southeast Regional Office
Bureau of Waste Site Cleanup
20 Riverside Drive
Lakeville, Massachusetts 02347

Prepared for:

American Auto Auction
93-123 Williams Street
North Dighton, Massachusetts 02764

Prepared by:

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SAGE Project No. R035B

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1.0 INTRODUCTION

SAGE Environmental, Inc. (*SAGE*) was retained by American Auto Auction to prepare a Response Action Outcome (RAO) Statement for the property identified by Release Tracking Number (RTN) 4-16565 located at 93-123 Williams Street in North Dighton, Massachusetts (herein after the Site). The location of the Site is depicted on **Figure 1**. This report is provided to supplement data from a Phase I Initial Site Investigation completed in September 2002 in an effort to evaluate environmental conditions associated with the release of dielectric fluids from transformers, which were destroyed during a fire on September 15, 2001 and to demonstrate that no further response actions are warranted.

A copy of the completed RAO Statement transmittal form (BWSC-104) is included as **Appendix 1**.

1.1 Regulatory Background

Information regarding the regulatory history of the release and parties undertaking response actions is summarized below:

Release Notification Date:	September 15, 2001
Release Tracking Number:	4-16565
Compliance Status:	Tier II, Phase II
Site Operator:	American Auto Auction 123 Williams Street North Dighton, MA 02724 Mike Schaefer, Assistant General Manager
Current Licensed Site Professional:	Matthew E. Hackman, LSP No. 9456 *SAGE* Environmental, Inc. 172 Armistice Boulevard Pawtucket, RI 02860
Other RTNs pertaining to the property:	4-16839
Latitude and longitude:	41° 52' 33' and 71° 9' 53", respectively
UTM coordinates:	320399E and 4638007N

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1.2 Site Description

The Site includes the area of the former Taunton Expo Building, the downslope parking lot areas to the east of the Expo Building, an intermittent stream which extends downstream from the parking lot for approximately 3,000 feet, and approximately 260 feet of grass road shoulder downslope to the west of the former Expo Building. The total Site area is approximately 10 acres. The Site is located on property which incorporates portions of four lots and a common easement area bordering Williams Street which is owned by the Town of Dighton. A Plat Map, which depicts the approximate Site boundaries, is included as **Figure 2**. A Site Plan, which depicts major Site features, is attached as **Figure 3**. A Site Plan of the road shoulder area is included as **Figure 4**.

The Site currently contains a small one-story auto reconditioning building and a paved parking lot used for wholesale auto auctioning. The east portion of the Site contains woodland and a constructed drainage ditch with an intermittent stream. The woodland area is isolated from the paved parking lot by a chain link fence.

1.3 Surrounding Area Description

The Site is bound by a vacant lot to the north and undeveloped woodland to the east. To the south is an automotive auction building and an office used by the American Auto Auction. Williams Street bounds the Site to the west. A single-family residence is located to the northwest, approximately 350 feet from the Site boundary.

1.4 Regional Characteristics

According to demographic data obtained from Boston Globe Publishing, the residential population within one-half mile of the Site is estimated to be 98 people (based on the 2000 Census). There are no institutions (as defined in 310 CMR 40.0006) within 500 feet of the Site.

Because a residence is located within 500 feet of the Site, pursuant to 310 CMR 40.0361, the applicable MCP soil reporting category is "RCS-1". Because the Site is not located within a current or potential drinking water source area, the applicable reporting category for groundwater is "RCGW-2".

The MADEP Bureau of Waste Site Cleanup Site Scoring Map, which is included as **Appendix 2**, indicates the following:

- No areas mapped as a potentially productive aquifer are shown within a 500-foot radius of the site. An approved Zone II for a public water supply is located approximately 1,500 feet west of the Site along the Segregansett River;
- The Site and surrounding 500-foot radius are not within a 100-year flood plain;
- There are no ground, surface or non-community public water supplies mapped within a 1,000-foot radius.

The Site is not located within 500 feet of the Interim Wellhead Protection area or Zone II for two municipal wells which are approximately 1,800 feet west of the Site, or within any other current or potential drinking water source area. However, the northern portion of the Site falls within 30 feet of an existing occupied building. Pursuant to 310 CMR 40.0932(2), the applicable Method 1 standard for groundwater within 30 feet of the occupied building is "GW-2".

The Site contains an intermittent stream which is not located within the Zone A of a Class A surface water body. However, this stream discharges to a Zone A surface water supply located approximately 4,000 feet downstream. According to the MCP, groundwater at all sites is considered a potential source of discharge to surface waters and shall be additionally categorized "GW-3". Based on the above, the Site is not located within a current or potential drinking water source area. The applicable groundwater category for the Site is thusly "GW-2" and "GW-3".

The Site and surrounding areas are connected to municipal sewer and water services available from the Town of Dighton.

1.5 Summary of Previous Environmental Investigations

Previous environmental investigations conducted at the Site are summarized in **Table 1**. Results of these investigations are summarized in **Section 4.0**.

Table 1
List of Previous Response Action Reports
93-123 Williams Street
North Dighton, Massachusetts

Document Type	Date Submitted to MADEP	Consultant
Immediate Response Action (IRA) Plan	October 2001	*SAGE*
IRA Status Report #1	January 2002	*SAGE*
IRA Modification	April 2002	*SAGE*
IRA Status Report #2	July 2002	*SAGE*
Phase I Initial Site Investigation	September 2002	*SAGE*
IRA Status Report #3	January 2003	*SAGE*
IRA Status Report #4	July 2003	*SAGE*
IRA Status Report #5	January 2004	*SAGE*
IRA Status Report #6	July 2004	*SAGE*

1.6 Release Description and Summary of Immediate Response Actions

A fire began Saturday night, September 15, 2001, destroying a three-story building known as the Taunton Expo – a large flea market for approximately 250 vendors. *SAGE* arrived on-site Sunday, September 16, 2001, at approximately 12:00 p.m. Within the burned building were electrical transformers, voltage regulators, and switchgear containing dielectric fluids ("transformer oils"). For convenience, this equipment will herein after be referred to as "transformers." Field testing of transformer oils by representatives of the MADEP suggested that some of the oils contained greater than 50 parts per million (ppm) of polychlorinated biphenyls (PCBs).

Subsequent laboratory analysis confirmed that one of these oils had PCB concentrations of over 95% PCBs. All known transformers and electrical equipment were emptied of their remaining contents into segregated 55-gallon drums. All of the transformers and electrical units were secured by wrapping them in 6-mil polyethylene plastic in anticipation of eventual disposal.

Based on available equipment labels and volume estimation, it is *SAGE*'s opinion that approximately 600 gallons of dielectric fluid was associated with this equipment. Approximately 100 gallons of oil was recovered. Assuming all units were initially full, approximately 500 gallons of oil may have been released from these units to the environment. The oil appears to have been transported by way of a large volume of water that was applied to the building for fire suppression purposes. It appears that the oil was released during the fire as a result of the building collapsing on the transformer units and/or their being grabbed by an excavator-mounted grappling arm. Additionally, it

appears that the oil was transported via storm water running across the parking lot and into drainage culverts and swales, which discharge into a constructed drainage swale or ditch (shown as an intermittent stream on the United States Geological Survey quadrangle map) east of the parking lot. This constructed swale or ditch discharges to wetlands located approximately ¾ of a mile south of the release location.

SAGE personnel followed the constructed swale or drainage ditch for approximately ¾ of a mile. There appeared to be an approximate 1,000-foot stretch of swale or ditch bottom that was visibly impacted with a probable mix of oil from the transformers, ash from the fire, and possibly, regular parking lot runoff. This visible impact had a black and greasy appearance that extended approximately one to two inches into the streambed. Laboratory results of this visibly impacted soil revealed PCBs of less than 1 parts per million (ppm) for all but one sample. A sediment sample collected at the farthest area of known separate phase oil extent exhibited a total PCB concentration of approximately 11.8 ppm. PCB content in water from the stream has ranged from non-detect (< 0.30 part per billion (ppb)) to 15 ppb.

On September 16, 2001, separate phase oil was contained with oil absorbent pads and booms in the stream and drainage swale. Oil saturated pads and booms were changed out and replaced on September 18, 2001 and November 16, 2001. The booms were removed for disposal by Frank Corporation on July 26, 2002.

Based on a Site meeting on September 20, 2001 with MADEP and U.S. Environmental Protection Agency (EPA) representatives, the PCB soil/sediment IRA objective for the Site was determined to be 1.0 ppm (1,000 µg/Kg) or less, and the groundwater objective is 0.5 ppb. Verbal approval was granted by the EPA and MADEP to remove the top two inches of sediment and/or obvious transformer oil stained soils from the constructed drainage channel and associated feeder swales.

Beginning October 2, 2001 and continuing through November 16, 2001, the top two inches of sediment were excavated from the drainage channel, banks, and associated feeder swales by Frank Corporation of New Bedford, Massachusetts. Excavation was performed primarily by hand using shovels and buckets. A backhoe with blade and/or a Bobcat™ with front bucket was used where the channel areas were accessible. Material was stored temporarily on Site in 20-yard steel rolloffs lined with plastic. Confirmatory samples were collected at approximate 50-foot intervals from the center of each excavated channel or swale. Sample locations were marked with stakes which were located using the global positioning system (GPS). Contaminants detected in on-Site media following the completion of initial spill response and sediment excavation via IRAs included PCBs and extractable petroleum hydrocarbons (EPHs). Within the swale and stream areas of the Site, post-excavation sediment samples for EPH analysis were collected from eight channel locations, which were previously sampled in September

2001. EPH at concentrations above background levels appeared to be present in stream sediments at locations MSW-1 and SP-1. Subsequently, an additional three inches of sediment was removed from these areas on July 26, 2002 and August 2, 2002. Additional confirmatory sampling was conducted to confirm sediment conditions in the stream/swale areas. The results of those investigations indicated that PCBs exceed the Threshold Effect Concentration (TEC) at one location in the middle swale area (Location MSW-1). Laboratory results for EPHs indicate that one sample from the north swale area has concentrations of C19-C36 aliphatics that exceed the 90th percentile background concentration (Location NSW-1). Subsequently additional sediment was removed from these swale areas on April 19, 2004. Post-excavation sampling results indicated that the level of PCBs in sediments was reduced to concentrations below the Threshold Effect Concentrations, and, the level of EPHs was reduced to concentrations below the 90th Percentile of Background for all EPH constituents.

At the western portion of the Site, EPHs were detected in soils at location "SS-2" within the Williams Street road shoulder at levels which appeared to be elevated relative to background concentrations and which were in excess of the Method 1, S-1/GW-2 standard. In view of these results, three inches of soil was excavated from the SS-2 area on July 26, 2002. Confirmatory analytical results indicated that EPHs still remained in residual soils at concentrations above the Method 1 standards. Subsequently, during December 2003, additional soil and groundwater investigations were performed to better define the lateral and vertical extent of the contamination and to evaluate site-specific background concentrations for EPHs in soils.

Based on the analysis of background analytical data, nine soil sample locations within the impacted area were observed to have EPH constituents which exceeded the 90th Percentile Background Concentration. Five soil sample locations were identified in this area where EPHs exceeded both the 90th Percentile Background Concentration and Method 1 Standards. Because the road shoulder is a common easement area owned by the Town of Dighton, implementation of an Activity and Use Limitation would be problematic. Excavation of the impacted soil was thusly chosen as the selected remedial alternative to achieve a condition of no significant risk.

Hence, on July 21-22, 2004, using a backhoe, impacted soils in the road shoulder area were excavated to a depth of 12 inches. Following excavation, eight confirmatory composite soil samples were collected from the excavation bottoms and sidewalls. Based on the analytical results, the soils in this area of the Site were remediated to concentrations which achieve background conditions and which achieve a condition of No Significant Risk under all foreseeable site uses.

2.0 ENVIRONMENTAL FATE AND TRANSPORT OF OIL AND/OR HAZARDOUS MATERIALS

2.1 Constituent Characteristics

Based on analytical results *SAGE* has identified the following constituents of concern:

- Polychlorinated Biphenyls (PCBs)
- Extractable Petroleum Hydrocarbons (EPHs)

Asbestos, which may have been released during the fire, was considered as a potential constituent but was not detected in on-site soil or sediment.

2.1.1 PCBs

PCBs, as Arochlor 1254 and Arochlor 1016/1242, were identified in high concentrations (>50 mg/kg) in dielectric fluid from five of the six transformers, which were destroyed by the fire. Immediately after the release, PCBs were detected in separate phase oil on the stream surface and in stream water. Following the completion of initial response and sediment excavation activities, PCBs were not detected in stream waters but were observed at a low frequency in stream sediments at concentrations which were in excess of the MADEP Threshold Effect Concentrations (59.8 ug/kg). PCBs were further detected at a concentration of 250 ug/kg in one soil sample (SS-1), collected from the grass road shoulder west of the former Expo Building. PCBs have not been detected in groundwater, catch basin sediments, or the storm drain outfall west of Williams Street.

PCBs are mixtures of synthetic chlorinated organic chemicals with the same basic chemical structure and similar physical properties as polycyclic aromatic hydrocarbons ranging from oily liquids to waxy solids. Due to their non-flammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were used in hundreds of industrial and commercial applications including electrical, heat transfer, and hydraulic equipment; as plasticizers in paints, plastics and rubber products; in pigments, dyes and carbonless copy paper and many other applications until their manufacture was banned in 1977.

PCBs have been shown to cause cancer in animals. PCBs have also been shown to cause a number of serious non-cancer health effects in animals, including effects on the immune system, reproductive system, nervous system, and endocrine system. PCBs have a relatively low solubility but they do not degrade easily in the natural environment and

hence will bioaccumulate in aquatic organisms. The persistence and environmental toxicity of PCBs in the environment is generally considered to be "high".

The U.S. EPA has included PCBs in its Priority PBT (Persistant Bioaccumulative and Toxic) program. PCBs are designated Priority PBTs because:

"PCBs do not break down in our environment and can have severe health effects on humans. PCBs in the air eventually return to our land and water by settling or from runoff in snow and rain. In our water, PCBs build up in fish and can reach levels hundreds of thousand of times higher than the levels in water. Fish consumption advisories are in effect for PCBs in all five of the Great Lakes. PCBs are the leading chemical risk from fish consumption."

PCBs can cause heath effects including:

- "Probable human carcinogen
- Damages the stomach
- Skin irritation
- Liver and Kidney damage
- Thyroid gland injuries "

(source: http://www.epa.gov/opptintr/pbt/PCB.htm)

2.1.2 Extractable Petroleum Hydrocarbons

The EPH constituents detected in onsite sediments included C9-C18 aliphatics, C19-C36 aliphatics, C11-C22 aromatics, acenapthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene indeno(1,2,3-cd) pyrene, napthalene, phenanthrene, and pyrene. EPH constituents detected in onsite soils include C19-C36 aliphatics, C11-C22 aromatics, acenapthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)athracene, fluoranthene, indeno(1,2,3-cd) pyrene, phenanthrene, and pyrene. EPH constituent detected in groundwater include C11-C22 aromatics, acenapthylene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(g,h,i)perylene, and pyrene. In surface water, C11-C22 aromatics were formerly detected in one stream sample at sample location SP-1, located approximately 3000 feet downstream from the release. Recent sampling has indicated no detectable EPH constituents. The C11-C22

aromatics include compounds also described as polycyclic aromatic hydrocarbons (PAH) due to their chemical structure.

EPHs are present in transformer oils, waste oils and motor fuels, and are commonly associated with pyrogenic material, i.e. as products of incomplete combustion (e.g. coal ash and wood ash) frequently found in urban fill as well as petroleum products such as fuel oils, asphalt and bitumin. Much of the EPH constituents detected onsite are clearly "background' occurrences derived from non-regulated parking lot and/or asphalt paved road runoff which has impacted the stream sediments and the adjacent unpaved areas with exposed soil. These are clearly "background" because they occur in areas, which have not otherwise been affected by the fire or any other "release" of oil or hazardous materials.

The environmental fate and transport behavior of individual EPH constituents varies with the size and shape of the molecule. In general, EPH compounds have a low volatility, a relatively low tendency to biodegrade, and are likely to accumulate in soils, sediments and biota. Water solubility and mobility of EPH decreases with increasing molecular weight. Low molecular weight PAHs such as pyrene, phenanthrene, and naphthalene, tend to be somewhat mobile and can be moderately persistent in groundwater or surface water.

Some PAHs, such as benzo(a)pyrene, may have serious health effects on humans. Benzo(a)pyrene has been included in U.S. EPA's Priority PBT program. The U.S. EPA notes that:

"Benzo(a)pyrene (B(a)P) is a member of a class of compounds known as polycyclic aromatic hydrocarbons (PAHs) which generally occur as complex mixtures and not as single compounds. PAHs are primarily by-products of incomplete combustion. These combustion sources are numerous, including natural sources such as wildfires, industrial processes, transportation, energy production and use, food preparation, smoking tobacco, and disposal activities such a as open trash burning.

B(a)P along with other PAHs are suspected of causing cancer in humans. It is bioaccumulative, does not break down easily in our environment, and is subject to long range air transport."

B(a)P:

- "Likely causes cancer in humans
- Causes skin disorders in humans and animals
- Causes harmful developmental and reproductive effects"

(source: http://www.epa.gov/opptintr/pbt/benzo.htm)

2.2 Identification and Characterization of Potential Pathways

The MCP requires consideration of potential pathways for the migration of oil and/or hazardous materials. These potential pathways include air, soil, groundwater, surface water, sediment, and the food chain. The potential threat to indoor air quality must also be considered.

2.2.1 Air

The constituents of concern, PCBs and EPHs, are relatively non-volatile compounds. EPHs and PCBs detected in soil and sediment are not located in proximity to any occupied structure. These constituents are not expected to significantly migrate via volatilization. While both classes of compounds may migrate as airborne particulates, the propert is mostly paved and the unpaved areas are heavily vegetated and often wet, and thus have little potential for dust releases. Adverse impacts to indoor air quality either on-Site or off-Site are not anticipated.

2.2.2 Soil and Sediment

Data indicate that EPHs and PCBs were detected in soils west of the former Expo Building and within sediments in an intermittent stream on the east side of the Site. Human exposure would be expected to potentially occur via dermal contact, inhalation or ingestion. Potential exposure would most likely happen in the event of excavation activities associated with subsurface and/or overhead utilities at the area west of the former Expo Building where municipal drains and overhead power lines are located. In addition, PCBs in sediments have a high potential for bioaccumulation, thus creating a potential for human exposure through the consumption of fish.

2.2.3 Groundwater

The Site is not located within a current or potential drinking water source area. Constituents of concern were not detected in on-site groundwater at concentrations in excess of Method 1, GW-2/GW-3 standards. Groundwater is not known to be used for any purposes either on-Site or at adjacent properties, as municipal water is available for the Town of Dighton. Exposure via groundwater is not anticipated.

2.2.4 Surface Water

EPH fractions in the form of C11-C22 aromatics were historically detected in samples collected on March 15, 2002 in one surface water sample collected from the intermittent stream at sample location SP-1, located approximately 3,000 feet down stream from the release. Human exposure would be expected to potentially occur via dermal contact or ingestion. Migration of contamination downstream could result in a potential discharge of contaminants to the Segreganset River, a Class A surface water which is used as a drinking water supply. Biological receptors, including fish, could additionally be adversely impacted.

2.3 Receptor Exposure Assessment

2.3.1 Human Receptors

As indicated in **Section 1.3**, the Site is used for commercial purposes. Accordingly, the frequency of use by children would be low. Adults are present at the Site at a high frequency. The intensity of use is considered low for both children and adults. Soils over the majority of the Site are considered inaccessible as they are located below impervious surfaces, primarily well-maintained, bituminous concrete pavement. An exception is the road shoulder area at the west side of the Site where EPH impacted soils are not covered by pavement and the soils are located within 300 feet of a house where children reside. However the frequency of use by children would still be low because the road shoulder would not be an area which would be frequented by children.

Data indicate that EPHs and PCBs were detected in sediment samples collected from drainage swales and the intermittent stream. Environmental exposure to these contaminants could occur via direct contact and ingestion by both aquatic and terrestrial organisms. PCBs in sediments have a high potential for bioaccumulation, creating a further potential for human or biological exposure through the consumption of fish or waterfowl and through other food chain pathways.

2.3.2 Environmental Receptors

Environmental exposure to PCBs and EPHs would be expected to occur via direct contact and ingestion by both aquatic and terrestrial organisms. PCB's (and some EPH constituents) in sediments and surface waters are considered to be "persistent" contaminants, have a high potential for bioaccumulation, creating a further potential for biological exposure through the consumption of fish or waterfowl and through other food

chain pathways. As noted in **Section 2.11** and 2.12 above, both PCBs and EPH the compound benzo(a)pyrene have been designated by the U.S. EPA as Priority PBTs.

3.0 CONCEPTUAL SITE MODEL

Based on available volume information and assuming that all transformers were initially full to capacity, *SAGE* broadly estimates that a total of 500 gallons of transformer oil was released during the fire. It appears that the oil was released as a result of the building collapsing on the transformers or their being grabbed by an excavator-mounted grappling arm. The transformer oil was transported via a large volume of water that was applied for fire suppression purposes. The main component of this fire runoff was observed to run to the east across the main parking lot and entered drainage swales at the edge of the parking lot which discharge to the intermittent stream.

A log jam area, located approximately 3,000 feet downstream at locations SP-1 (3650'), appears to have prevented any major quantity of oil from flowing further downstream. The primary residual impacts from the release were to sediments in the drainage swales and in the main channel of the intermittent stream. A minor component of fire runoff may have entered two storm water catch basins and discharged to the intermittent stream via culverts. However, sediments in the catch basins appear to have not been impacted by PCBs, likely because the catch basin sumps were already filled to capacity with sediment at the time of the release.

As evidence by analytical data, a minor component of PCB-laden fire runoff infiltrated a former electric manhole which was north of the building and a former basement parking garage under the east side of the building. Based on analytical results, groundwater and soil in these areas does not appear to have been adversely impacted by PCBs or EPHs or in areas downgradient to the electric manhole and basement.

Based on observed runoff flow patterns and as evidenced by soil analytical data, a small component of transformer oil runoff appears to have discharged to the west onto a grass road shoulder which borders Williams Street. As indicated by several areas with EPH constituent concentrations which are above 90th percentile background concentrations, the extent of significant soil impact extends for approximately 250 to 260 feet. There appear to have been no significant PCB impacts to storm drains on Williams Street as evidenced by the absence of PCBs in outfall sediments west of Williams Street. Because the road shoulder is a common easement area owned by the Town of Dighton, implementation of an Activity and Use Limitation would be problematic. Excavation of the impacted soil was thusly chosen as the selected remedial alternative to achieve a

condition of no significant risk. These activities are described in **Section 5.3** of this report.

4.0 RESULTS OF PREVIOUS INVESTIGATIONS

As indicated above, previous immediate response actions have been conducted at the Site yielding data necessary to determine the nature and extent of Site contaminants. Data from these investigations have been previously submitted to MADEP in IRA Status Reports 1 through 6 and in the Phase I Initial Site Investigation. A summary of pertinent data gained during previous response actions has been compiled and is appended as follows in **Appendix 3 - Historical Soil, Sediment and Surface Water Analytical Data** and **Appendix 4 - Historical Groundwater Analytical Data.**

4.1 PCBs

4.1.1 Sediment

Shortly after the fire during September 17 through September 20, 2001, *SAGE* collected twenty-seven (27) sediment samples from drainage swales, stream channels and along the pavement perimeter, which was impacted by fire runoff. These samples were submitted to a Massachusetts-certified laboratory for analyses of PCBs via EPA Method 8082. Laboratory results are summarized on **Table 2** and the sample locations are depicted on **Figure 3**. Laboratory reports and chain of custody documentation are included in **Appendix 3**. Note that some of the chains of custody have mistakenly identified the sampled media as "soil". With consideration to these data, PCB impacts to sediments were greatest in the "middle swale" (the MSW samples) and in the downstream areas of the main stream channel (location SP-1). Both Arochlor 1254 and Arochlor 1242 congeners were detected in the sediments. These same PCB congeners were identified in residual dielectric oils collected from electrical equipment immediately after the fire.

Since the completion of initial spill response and IRA excavation activities, PCBs were detected at low concentrations and low frequency in on-Site sediments. Following the initial excavation of two inches of sediment from the drainage swales and stream channel during October through November 2001, confirmatory grab samples were collected at approximate 50-foot intervals. Laboratory analysis using EPA Method 8082 indicated that seven (7) of eighty post-excavation sediment samples had detected concentrations of total PCBs which ranged from 61 ug/kg (at location 1100'-1150') to 510 ug/kg (location 3600'-3650'/SP-1). Laboratory results are summarized on **Table 3**. Sample locations are depicted on **Figure 3**. All seven detected PCB concentrations were significantly below

the IRA objective of 1,000 ug/kg but were in excess of the Threshold Effect Concentration of 59.8 ug/kg (later published by the MADEP in May, 2002). No PCBs were detected in sediment samples collected within the channel section extending 200 feet downstream from the terminus of excavation activities (samples SP-50 through SP-200). No PCBs were detected in sediment samples collected from two on-site catch basins and a drain manhole located in the main parking lot.

To obtain data representative of current sediment conditions, the above-described seven locations were resampled by *SAGE* during March 2003. All samples were collected in accordance with in accordance with MADEP's Quality Assurance and Quality Control Guidelines (WSC-CAM-VIIA). Laboratory results are summarized on **Table 4** and sample locations are depicted on **Figure 3**. Laboratory results indicated that PCBs exceeded the Threshold Effect Concentration (TEC) at only one location in the middle swale area (Location 1300'-1350', MSW-1). PCBs at the other six locations were below the TEC, possibly the result of dilution by natural attenuation processes. Subsequently, additional sediment excavation in the middle swale was performed at location MSW-1 on April 19, 2004. EPH-contaminated sediment at another nearby location in the north swale, NSW-1, was also excavated on the same day. Approximately three inches of sediment was hand excavated from the swale channel over a channel length extending approximately 15 feet. Approximately one drum of sediment and debris was removed. Following excavation, confirmatory composite samples were collected and submitted to a Massachusetts-certified laboratory for analysis for PCBs via EPA Method 8082 using promulgated MADEP QA/QC methods. The post-excavation laboratory results are summarized on **Table 5**. Based on the post-excavation analytical results, PCBs at location MSW-1 had now been reduced to concentrations below the TEC. Based on the available data, there appeared to be no sediment in the swale/stream areas where PCBs would be likely to exceed the TEC. Further response actions with regards to PCBs in sediment appeared to be unwarranted. Laboratory analytical reports, including chain of custody documentation, are included in **Appendix 3**.

To evaluate potential impacts by PCB-laden runoff west of the release area, *SAGE* located the outfall for the storm drains on Williams Street. The outfall, a 48-inch metal pipe, was found in a wooded area located on the west side of the roadway. The approximate location of the outfall is depicted on **Figure 3**. One sediment sample was collected from the channel directly below the base of the outfall and submitted to a Massachusetts certified laboratory for analysis for PCBs via EPA Method 8082. Laboratory results indicated no detected PCBs above the method detection limit of 41 ug/kg. The laboratory analytical report, including chain of custody documentation, is included in **Appendix 3**.

Table 2
Pre-Excavation Sediment Analytical Results - PCBs
93-123 Williams Street
North Dighton, Massachusetts

Sample / Date	Concentration																									MADEP TEC
	SSW-1	MSW-1	NSW-1	FP-6	FP-7	FP-8	FP-11	MSW-2A	MSW-2B	MSW-2C	SW-4A	SW-4B	SW-4C	SW-5A	SW-5B	SW-5C	SW-5D	SP-1	SP-2	SP-3	SP-4	SP-5	SP-6A	SP-7	SP-8	SP-9	SP-10	
Analyte	9/17/01	9/17/01	9/17/01	9/18/01	9/18/01	9/18/01	9/18/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/20/01	9/20/01	9/20/01	9/20/01	9/20/01	9/20/01	
PCB's by 8082 (ug/kg):																												
Aroclor 1016/1242	<17	<17	<14	<50	<50	<50	<50	<50	85.7	<50	<50	<50	<50	<50	<50	<50	<50	3060[a]	<50	<50	<50	<50	<50	<50	<50	<50	<50	NE
Aroclor 1254	<17	140	21	<50	<50	<50	<50	<50	493	<50	<50	625	<50	<50	<50	<50	<50	8780[a]	<50	369	<50	<50	232	169	338	759	889	NE
Total PCB	<17	**140**	21	<50	<50	<50	<50	<50	**578.7**	<50	<50	**625**	<50	<50	<50	<50	<50	**11840[a]**	<50	**369**	<50	<50	**232**	**169**	**338**	**759**	**889**	59.8

Where necessary, the MADEP standards have been converted from ppm to ppb, or vice-versa, to match the laboratory reporting method.

<x: Indicates analyte concentration not detected at or above specified laboratory quantitation limit (x)
Sample Results:
a: Analyte concentration in this sample exceeds the MADEP standard for: S1/GW1 & S1/GW3 type soil
SSW=South Swale
FP=Fence Post
MSW=Middle Swale
NSW=North Swale
SP=Sample Point
TEC=Threshold Effect Concentration
NE=No standard has been established for this analyte

Table 3
Post-Excavation Sediment Analytical Results - PCBs
Samples Collected October-November 2001

Sample Location	PCB Concentration (ug/kg)						
(Depth in feet)	Arochlor 1221	Aroclor 1232	Arochlor 1016/1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Total PCBs
0-50	ND	ND	ND	ND	ND	ND	ND
50-100	ND	ND	ND	ND	ND	ND	ND
100-150	ND	ND	ND	ND	ND	ND	ND
150-200	ND	ND	ND	ND	ND	ND	ND
200-250	ND	ND	ND	ND	ND	ND	ND
250-300	ND	ND	ND	ND	ND	ND	ND
300-350	ND	ND	ND	ND	ND	ND	ND
350-400	ND	ND	ND	ND	ND	ND	ND
400-450	ND	ND	ND	ND	ND	ND	ND
450-500	ND	ND	ND	ND	ND	ND	ND
500-550	ND	ND	ND	ND	ND	ND	ND
550-600	ND	ND	ND	ND	ND	ND	ND
600-650	ND	ND	ND	ND	ND	ND	ND
650-700	ND	ND	ND	ND	ND	ND	ND
700-750	ND	ND	ND	ND	ND	ND	ND
750-800	ND	ND	ND	ND	ND	ND	ND
800-850	ND	ND	ND	ND	ND	ND	ND
850-900	ND	ND	ND	ND	ND	ND	ND
900-950	ND	ND	ND	ND	ND	ND	ND
950-1000	ND	ND	ND	ND	ND	ND	ND
1000-1050	ND	ND	ND	ND	ND	ND	ND
1050-1100	ND	ND	ND	ND	ND	ND	ND
1100-1150	ND	ND	ND	ND	**61**	ND	**61**
1150-1200	ND	ND	ND	ND	ND	ND	ND
1200-1250	ND	ND	ND	ND	ND	ND	ND
1250-1300	ND	ND	ND	ND	**136**	ND	**136**
1300-1350	ND	ND	ND	ND	**91.5**	ND	**91.5**
1350-1400	ND	ND	ND	ND	ND	ND	ND
1400-1450	ND	ND	ND	ND	ND	ND	ND
1450-1500	ND	ND	ND	ND	ND	ND	ND
1500-1550	ND	ND	ND	ND	ND	ND	ND
1550-1600	ND	ND	ND	ND	ND	ND	ND
1600-1650	ND	ND	ND	ND	ND	ND	ND
1650-1700	ND	ND	ND	ND	ND	ND	ND
1700-1750	ND	ND	ND	ND	ND	ND	ND
1750-1800	ND	ND	ND	ND	ND	ND	ND
1800-1850	ND	ND	ND	ND	ND	ND	ND
1850-1900	ND	ND	ND	ND	ND	ND	ND
1900-1950	ND	ND	ND	ND	ND	ND	ND
1950-2000	ND	ND	ND	ND	ND	ND	ND
2000-2050	ND	ND	ND	ND	ND	ND	ND
2050-2100	ND	ND	ND	ND	ND	ND	ND
2100-2150	ND	ND	ND	ND	**62**	ND	**62**
2150-2200	ND	ND	ND	ND	ND	ND	ND
2200-2250	ND	ND	ND	ND	ND	ND	ND
2250-2300	ND	ND	ND	ND	ND	ND	ND
2300-2350	ND	ND	ND	ND	ND	ND	ND
2350-2400	ND	ND	ND	ND	ND	ND	ND
2400-2450	ND	ND	ND	ND	ND	ND	ND
2450-2500	ND	ND	ND	ND	ND	ND	ND
2500-2550	ND	ND	ND	ND	ND	ND	ND
2550-2600	ND	ND	ND	ND	ND	ND	ND
2600-2650	ND	ND	ND	ND	ND	ND	ND
2650-2700	ND	ND	ND	ND	ND	ND	ND
2700-2750	ND	ND	ND	ND	ND	ND	ND
2750-2800	ND	ND	ND	ND	ND	ND	ND
2800-2850	ND	ND	ND	ND	ND	ND	ND
2850-2900	ND	ND	ND	ND	ND	ND	ND
2900-2950	ND	ND	ND	ND	ND	ND	ND
2950-3000	ND	ND	ND	ND	ND	ND	ND
3000-3050	ND	ND	**250**	ND	ND	ND	**250**
3050-3100	ND	ND	ND	ND	ND	ND	ND
3100-3150	ND	ND	ND	ND	ND	ND	ND
3150-3200	ND	ND	ND	ND	ND	ND	ND
3200-3250	ND	ND	ND	ND	**79.6**	ND	**79.6**
3250-3300	ND	ND	ND	ND	ND	ND	ND
3300-3350	ND	ND	ND	ND	ND	ND	ND
3350-3400	ND	ND	ND	ND	ND	ND	ND
3400-3450	ND	ND	ND	ND	ND	ND	ND
3450-3500	ND	ND	ND	ND	ND	ND	ND
3500-3550	ND	ND	ND	ND	ND	ND	ND
3550-3600	ND	ND	ND	ND	ND	ND	ND
3600-3650 (SP-1)	ND	ND	**510**	ND	ND	ND	**510**
SP-50	ND	ND	ND	ND	ND	ND	ND
SP-100	ND	ND	ND	ND	ND	ND	ND
SP-150	ND	ND	ND	ND	ND	ND	ND
SP-200	ND	ND	ND	ND	ND	ND	ND
PE SF-4 (3200)	ND	ND	ND	ND	ND	ND	ND
PE SF-1 (3675)	ND	ND	ND	ND	ND	ND	ND

ND = Not Detected - Below the Analytical Detection Limit (0.50 ug/kg or less)
NS = Not Sampled

Table 4
Post-Excavation Sediment Analytical Results - PCBs
Samples Collected March 28, 2003

Sample / (Depth) / Date	Concentration								MADEP TEC (ug/kg)
Analyte	1100-1150 3/28/2003	1250-1300 3/28/2003	1300-1350 (MSW-1) 3/28/2003	2100-2150 3/28/2003	3000-3050 3/28/2003	3000-3050 FD 3/28/2003	3200-3250 3/28/2003	3600-3650 (SP-1) 3/28/2003	
PCB's by 8082 (ug/kg):									
Aroclor 1254	48	52	**69**	<16	<18	<18	<38	<33	NE
Total PCB	48	52	**69**	<16	<18	<18	<38	<33	59.8

Where necessary, the MADEP standards have been converted from ppm to ppb, or vice-versa, to match the laboratory reporting method.

<x: Indicates analyte concentration not detected at or above specified laboratory quantitation limit (x)

TEC = Threshold Effect Concentration per MADEP SEDSCRN Technical Update, May 2002
NE = No standard has been established for this substance
MSW = Middle Swale
FD = Field Duplicate

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Table 5
Post-excavation Sediment Analytical Results - PCBs and EPHs
Samples Collected April 19, 2004

Sample / (Depth) / Date Analyte	Concentration PE-NSW 4/19/2004	 PE-MSW 4/19/2004	MADEP Method 1 Standard S-1 / GW-3 Soil	90th Percentile of Background Concentrations	MADEP Threshold Effects Concentration (ug/kg)
Extractable Petroleum Hydrocarbon (EPH) (ug/kg):		NA			
C9-C18 Aliphatics	<12000		1000000	17000	NE
C19-C36 Aliphatics	26000		2500000	104400	NE
C11-C22 Aromatics	<12000		800000	296000	NE
Acenaphthene	<49		1000000	320	NE
Acenaphthylene	88		100000	135	NE
Anthracene	78		1000000	1068	57.2
Benzo[a]anthracene	92		700	1680	108
Benzo[a]pyrene	<49		700	808	150
Benzo[b]fluoranthene	62		700	1160	NE
Benzo[g,h,i]perylene	<49		1000000	284	NE
Benzo[k]fluoranthene	91		7000	506	NE
Chrysene	110		7000	1700	166
Dibenz[a,h]anthracene	<49		700	170	33
Fluoranthene	<49		1000000	5260	423
Fluorene	<49		1000000	446	77.4
Indeno[1,2,3-cd]pyrene	<49		700	314	NE
Phenanthrene	<49		100000	4440	176
Pyrene	99		700000	4340	195
2-Methylnaphthalene	<49		500000	135	NE
Naphthalene	<49		100000	170	176
Total PAHs	1110				1610
PCB's by 8082 (ug/kg):	NA				
Aroclor 1016		<16	NE	NE	NE
Aroclor 1221		<16	NE	NE	NE
Aroclor 1232		<16	NE	NE	NE
Aroclor 1242		<16	NE	NE	NE
Aroclor 1248		<16	NE	NE	NE
Aroclor 1254		<16	NE	NE	NE
Aroclor 1260		<16	NE	NE	NE
Total PCB		<16	2000	NE	59.8

Where necessary, the MADEP standards have been converted from ppm to ppb, or vice-versa, to match the laboratory reporting method.

NA: Analysis not performed
<x: Indicates analyte concentration not detected at or above specified laboratory quantitation limit (x)
NE = No standard has been established for this substance
NSW = North Swale
MSW = Middle Swale

4.1.2 Soil

PCBs were detected at a concentration of 250 ug/kg in one soil sample (SS-1) collected from the grass shoulder on the south side of the driveway west of the former Expo Building. This concentration is below the IRA objective of 1,000 ug/kg and the Method 1 S-1/GW-2 standard of 2,000 ug/kg. It appears that some PCBs were flushed westerly into this area by fire suppression runoff but the volume and concentration was insignificant. However analytical data indicate that soils in this area were significantly impacted by the release of EPHs, which may have been in part derived from dielectric fluids released during the fire. Impacts to soil by EPHs are described in **Sections 4.2** and **5.3** of this report. Analytical data for PCBs in road shoulder soils is summarized in **Table 6**.

To evaluate potential objectionable impacts from the seepage of PCB runoff to soil and/or groundwater into an electric manhole on the north side of the building, *SAGE* installed two soil borings completed as monitor wells on November 11, 2002. Prior to drilling, the location of the former manhole was determined using a Trimble Model TSC1 global positioning unit. The first monitor well, MW-4, was located approximately 10 feet northeast of the manhole. The second monitor well, MW-5, was located approximately 10 feet southeast of the manhole. The construction details of each well are depicted on boring logs included in **Appendix 4**. Soil field screening results are included on the boring logs. One soil sample from each boring was retained for laboratory analysis. Samples were selected from the zone near the top of the apparent overburden aquifer. The samples were submitted to a Massachusetts-certified laboratory for analysis for PCBs via EPA Method 8082. Laboratory results indicated no detected concentrations of PCBs. Analytical reports including Chain-of-Custody documentation are included as **Appendix 3**. Analytical results compared to S-2 and S-3 standards are summarized on **Table 7**.

To further evaluate soil and groundwater conditions *SAGE* advanced six (6) soil borings (MW-6-2 through MW-11) on August 26-27, 2003. Boring MW-6-2 was drilled to replace former monitor well MW-6 which was destroyed during parking lot repaving. Borings MW-7 and MW-8 were located within the footprint of the former Expo Center Building to evaluate potential impacts from contaminated runoff, which may have entered the building basement. MW-9 and MW-11 were situated to evaluate the area immediately downgradient of the former Expo building, and, MW-10 was located to evaluate potential impacts from a storm water catch basin which is situated within the area of impact by contaminated runoff. Soil boring and monitor well locations are identified on **Figure 3**. The construction details of each well are depicted on the boring logs included in **Appendix 4**. Soil field screening results are included on the boring logs.

Selected soil samples from MW-7, MW-8, MW-9, and MW-10 were submitted for laboratory analysis of PCBs using EPA Method 8082 and EPH using promulgated

MADEP QA/QC methods. Laboratory results indicated no detected PCBs in any of the soil samples. Laboratory results are summarized on **Table 8**. Laboratory Reports are included in **Appendix 3**.

Table 6
Pre-Excavation Soil Analytical Results
Road Shoulder Area – PCBs and EPHs
93-123 Williams Street
North Dighton, Massachusetts

Sample / (Depth) / Date	Concentration			MADEP Method 1 Standard		MADEP Method 3 Soil UCL
	SS-1 0-1"	SS-2 0-1"	SS-3 0-1"	S-1 / GW-2 Soil	S-1 / GW-3 Soil	
Analyte	3/20/02	3/20/02	3/20/02			
Extractable Petroleum Hydrocarbon (EPH) (ug/kg):						
C19-C36 Aliphatics	47000	230000	32000	2500000	2500000	20000000
C11-C22 Aromatics	200000[a]	**1600000[ac]**	290000[a]	800000	800000	10000000
Acenaphthene	<110	<1100	290	1000000	1000000	10000000
Acenaphthylene	310	<1100	150	100000	100000	10000000
Anthracene	250	2100	820	1000000	1000000	10000000
Benzo[a]anthracene	**890[ac]**	**15000[ac]**	**4600[ac]**	700	700	100000
Benzo[a]pyrene	**910[ac]**	**12000[ac]**	**4000[ac]**	700	700	100000
Benzo[b]fluoranthene	**920[ac]**	**17000[ac]**	**5700[ac]**	700	700	100000
Benzo[g,h,i]perylene	550	3600	1500	1000000	1000000	10000000
Benzo[k]fluoranthene	840	**16000[ac]**	3700	7000	7000	400000
Chrysene	1000	**22000[ac]**	6000	7000	7000	400000
Dibenz[a,h]anthracene	260	**2300[ac]**	**760[ac]**	700	700	100000
Fluoranthene	1600	41000	11000	1000000	1000000	10000000
Fluorene	<110	<1100	350	1000000	1000000	10000000
Indeno[1,2,3-cd]pyrene	600	**4800[ac]**	**1800[ac]**	700	700	100000
Phenanthrene	500	18000	5300	700000	100000	10000000
Pyrene	1400	33000	8600	700000	700000	10000000
PCB's by 8082 (ug/kg):						
Aroclor 1242	250	<14	<16			
Total PCB	250	<14	<16	2000	2000	100000

Where necessary, the MADEP standards have been converted from ppm to ppb, or vice-versa, to match the laboratory reporting method.

<x: Indicates analyte concentration not detected at or above specified laboratory quantitation limit (x)

Sample Results:

a-c: Analyte concentration in this sample exceeds the MADEP standard for:

a: S1/GW1 type soil

SS=Soil Sample

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Table 7
Soil Analytical Results: MW-4 and MW-5
93-123 Williams Street
North Dighton, Massachusetts

Sample / (Depth) / Date	Concentration		MADEP Method 1 Standard				MADEP Method 3 Soil UCL
Analyte	MW-4, 15-20' 11/11/2002	MW-5, 15-20' 11/11/2002	S-2 / GW-2 Soil	S-2 / GW-3 Soil	S-3 / GW-2 Soil	S-3 / GW-3 Soil	
PCB's by 8082 (ug/kg):							
Aroclor 1016	<14	<14	NE	NE	NE	NE	NE
Aroclor 1221	<14	<14	NE	NE	NE	NE	NE
Aroclor 1232	<14	<14	NE	NE	NE	NE	NE
Aroclor 1242	<14	<14	NE	NE	NE	NE	NE
Aroclor 1248	<14	<14	NE	NE	NE	NE	NE
Aroclor 1254	<14	<14	NE	NE	NE	NE	NE
Aroclor 1260	<14	<14	NE	NE	NE	NE	NE
Total PCBs	<14	<14	2000	2000	2000	2000	100000

Where necessary, the MADEP standards have been converted from ppm to ppb, or vice-versa, to match the laboratory reporting method.

<x: indicates analyte concentration not detected at or above specified laboratory quantitation limit (x)

NE: No Standard is established for this substance

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Table 8
Analytical Summary: Soil Samples from MW-7, MW-8, MW-9, and MW-10
PCBs and EPHs
93-123 Williams Street
North Dighton, Massachusetts

Sample / (Depth) / Date	Concentration						MADEP Method 1 Standard						MADEP Background in "Natural" Soil*
Analyte	MW-7, 5'-7' 8/26/2003	MW-7, 15'-17' 8/26/2003	MW-8, 5'-7' 8/26/2003	MW-8, 15'-17' 8/26/2003	MW-9, 10'-12' 8/27/2003	MW-10, 10'-12' 8/27/2003	S-1 / GW-2 Soil	S-1 / GW-3 Soil	S-2 / GW-2 Soil	S-2 / GW-3 Soil	S-3 / GW-2 Soil	S-3 / GW-3 Soil	
Extractable Petroleum Hydrocarbon (EPH) (ug/kg):													
C9-C18 Aliphatics	<11000	<11000	<10000	<11000	<11000	<11000	1000000	1000000	2500000	2500000	5000000	5000000	NE
C19-C36 Aliphatics	<11000	<11000	<10000	<11000	<11000	<11000	2500000	2500000	5000000	5000000	5000000	5000000	NE
C11-C22 Aromatics	47000	<11000	<10000	<11000	14000	<11000	800000	800000	2000000	2000000	5000000	5000000	NE
Acenaphthene	<110	<110	<100	<110	<110	<110	1000000	1000000	2500000	2500000	5000000	4000000	500
Acenaphthylene	<110	<110	<100	<110	<110	<110	100000	100000	2500000	1000000	2500000	1000000	500
Anthracene	<110	<110	<100	<110	<110	<110	1000000	1000000	2500000	2500000	5000000	5000000	1000
Benzo[a]anthracene	150	<110	<100	<110	<110	<110	700	700	1000	1000	4000	4000	2000
Benzo[a]pyrene	150	<110	<100	<110	<110	<110	700	700	700	700	700	700	2000
Benzo[b]fluoranthene	170	<110	<100	<110	<110	<110	700	700	1000	1000	4000	4000	2000
Benzo[g,h,i]perylene	<110	<110	<100	<110	<110	<110	1000000	1000000	2500000	2500000	2500000	2500000	1000
Benzo[k]fluoranthene	<110	<110	<100	<110	<110	<110	7000	7000	10000	10000	40000	40000	1000
Chrysene	160	<110	<100	<110	<110	<110	7000	7000	10000	10000	40000	40000	2000
Dibenz[a,h]anthracene	<110	<110	<100	<110	<110	<110	700	700	700	700	800	800	500
Fluoranthene	310	<110	<100	<110	<110	<110	1000000	1000000	2000000	1000000	5000000	1000000	4000
Fluorene	<110	<110	<100	<110	<110	<110	1000000	1000000	2000000	2000000	5000000	4000000	1000
Indeno[1,2,3-cd]pyrene	<110	<110	<100	<110	<110	<110	700	700	1000	1000	4000	4000	1000
Phenanthrene	220	<110	<100	<110	<110	<110	1000000	100000	2500000	100000	2500000	100000	3000
Pyrene	320	<110	<100	<110	<110	<110	700000	700000	2000000	2000000	5000000	5000000	4000
2-Methylnaphthalene	<110	<110	<100	<110	<110	<110	500000	500000	1000000	1000000	2000000	1000000	500
Naphthalene	<110	<110	<100	<110	<110	<110	100000	100000	1000000	1000000	1000000	1000000	500
PCB's by 8082 (ug/kg):													
Aroclor 1016	<14	<15	<14	<14	<14	<15	NE	NE	NE	NE	NE	NE	NE
Aroclor 1221	<14	<15	<14	<14	<14	<15	NE	NE	NE	NE	NE	NE	NE
Aroclor 1232	<14	<15	<14	<14	<14	<15	NE	NE	NE	NE	NE	NE	NE
Aroclor 1242	<14	<15	<14	<14	<14	<15	NE	NE	NE	NE	NE	NE	NE
Aroclor 1248	<14	<15	<14	<14	<14	<15	NE	NE	NE	NE	NE	NE	NE
Aroclor 1254	<14	<15	<14	<14	<14	<15	NE	NE	NE	NE	NE	NE	NE
Aroclor 1260	<14	<15	<14	<14	<14	<15	NE	NE	NE	NE	NE	NE	NE
Total PCBs	<14	<15	<14	<14	<14	<15	2000	2000	2000	2000	2000	2000	NE

Where necessary, the MADEP standards have been converted from ppm to ppb, or vice-versa, to match the laboratory reporting method.

<x: Indicates analyte concentration not detected at or above specified laboratory quantitation limit (x)

NE = Not Established

*= per MADEP Technical Update 05232002

4.1.3 Surface Water and Runoff

An initial round of stream and surface runoff sampling was conducted prior to sediment excavation in the period from September 19 through September 26, 2001. Samples were collected using a Teflon pond ladle. Samples were submitted to a Massachusetts-certified laboratory for the analysis of PCBs via EPA Method 8082. One sample from the garage basement was additionally analyzed for semivolatiles via EPA Method 8270. Chain-of Custody forms and Certificates of analysis are included in **Appendix 3**. Laboratory results are summarized on **Table 9**.

With consideration to the data, PCBs in excess of the IRA water objective (0.5 ug/L) were noted in water samples collected from the stream channel in downstream areas; within runoff water which accumulated in the Expo garage basement; within runoff water which entered an electric manhole on the north side of the Expo building; and, in pavement runoff collected at the northwest side of the Expo building. Subsequent subsurface testing revealed that PCB runoff did not significantly impact soils or groundwater in the vicinity of the electric manhole, the garage basement and the soil at the west side of the Site. PCBs were initially detected at 4.8 ug/l in stream samples collected at the Tremont Street culvert on September 19, 2001 but this concentration decreased to below analytical detection limits as observed in later samples collected on September 26, 2001 and in fourteen subsequent sampling events conducted both during and after sediment excavation activities. Based on these findings, there appear to be no significant long-term impacts to surface waters by PCBs. Analytical results for surface water samples collected from the stream at the Tremont Street culvert are summarized on **Table 10**.

Table 9
Runoff and Stream Analytical Results
93-123 Williams Street
North Dighton, Massachusetts

Sample / Date	Concentration											MADEP Ambient Water Quality Criteria
	Garage	WS-1	BR-1 (Tremont Street)	BR-2	Electric Manhole	NW Fence Car Runoff	Exterior 2nd Hay bales	D-grad P-lot fence line	Fence Corner	SP-1 (stream)	CB North	Fresh Water Chronic
Analyte	9/19/01	9/17/01	9/19/01	9/19/01	9/19/01	9/25/01	9/25/01	9/25/01	9/25/01	3/15/02	3/20/02	
PCBs by 8082 (ug/L):										NA		
Aroclor 1016	<0.4	<0.6	<0.4	<0.41	<40	<0.3	<0.3	<0.3	<0.3		<0.1	NE
Aroclor 1221	<0.4	<0.6	<0.4	<0.41	<40	<0.3	<0.3	<0.3	<0.3		<0.1	NE
Aroclor 1232	<0.4	<0.6	<0.4	<0.41	<40	<0.3	<0.3	<0.3	<0.3		<0.1	NE
Aroclor 1242	11	<0.6	<0.4	<0.41	<40	24.5	<0.3	<0.3	<0.3		<0.1	NE
Aroclor 1248	<0.4	<0.6	<0.4	<0.41	<40	<0.3	<0.3	<0.3	<0.3		<0.1	NE
Aroclor 1254	5	<0.6	15	4.8	420	<0.3	<0.3	<0.3	<0.3		<0.1	NE
Aroclor 1260	<0.4	<0.6	<0.4	<0.41	<40	<0.3	<0.3	<0.3	<0.3		<0.1	NE
Total PCB	**16**	<0.6	**15**	**4.8**	**420**	**24.5**	<0.3	<0.3	<0.3		<0.1	0.014
Extractable Petroleum Hydrocarbon (EPH) Ranges (ug/kg):	NA	NA	NA	NA	NA	NA	NA	NA	NA			
C9-C18 Aliphatics										<110	210	NE
C19-C36 Aliphatics										<110	4600	NE
C11-C22 Aromatics										380	13000	NE
Semivolatiles by GC/MS by 8270 (SIMS) (ug/L):		NA	NA	NA	NA	NA	NA	NA	NA			
Acenaphthene	2.6									<1.1	<1	520
Acenaphthylene	23									<1.1	<1	NE
Anthracene	5.9									<1.1	<1	NE
Benzo[a]anthracene	3.2									<1.1	<1	NE
Benzo[a]pyrene	3.6									0.22	<1	NE
Benzo[b]fluoranthene	2.4									<1.1	<1	NE
Benzo[g,h,i]perylene	3.6									<0.54	<1	NE
Benzo[k]fluoranthene	2.3									<1.1	<1	NE
Chrysene	3.3									<1.1	<1	NE
Dibenz[a,h]anthracene	0.78									<0.54	<1	NE
Fluoranthene	10									<1.1	2.8	NE
Fluorene	9									<1.1	<1	NE
Indeno[1,2,3-cd]pyrene	2.6									<0.54	<1	NE
Phenanthrene	23									<1.1	2.4	30
Pyrene	13									<1.1	2.0	NE
2-Methylnaphthalene	14									<1.1	<1	NE
Naphthalene	33									<1.1	<1	620

Where necessary, the MADEP standards have been converted from ppm to ppb, or vice-versa, to match the laboratory reporting method.

NA: Not applicable
<x: Indicates analyte concentration not detected at or above specified laboratory quantitation limit (x)
Sample Results:
CB = Catch Basin runoff sample
BR= "Brook" (i.e. the intermittent stream)
SP = "Sample Point" in the intermittent stream

Table 10
Surface Water Analytical Results Summary - Tremont Street Culvert
93-123 Williams Street
North Dighton, Massachusetts

Sample / Date	Concentration															MADEP Ambient Water Quality Criteria
	Tremont Culvert															Fresh Water Chronic
Analyte	9/26/01	10/5/01	10/11/01	10/18/01	10/24/01	10/31/01	11/7/01	11/14/01	11/27/01	3/15/02	8/2/02	9/8/03	11/25/03	3/25/04	6/23/04	
PCBs by 8082 (ug/L):																
Aroclor 1016	<0.3[a]	<50[a]	<0.3[a]	<0.3[a]	<0.3[a]	<0.4[a]	<0.45[a]	<0.43[a]	<0.4[a]	<0.1[a]	<0.2[a]	<0.01	<0.0083	<0.02[a]	<0.01	—
Aroclor 1221	<0.3[a]	<50[a]	<0.3[a]	<0.3[a]	<0.3[a]	<0.4[a]	<0.45[a]	<0.43[a]	<0.4[a]	<0.1[a]	<0.2[a]	<0.01	<0.0083	<0.02[a]	<0.01	—
Aroclor 1232	<0.3[a]	<50[a]	<0.3[a]	<0.3[a]	<0.3[a]	<0.4[a]	<0.45[a]	<0.43[a]	<0.4[a]	<0.1[a]	<0.2[a]	<0.01	<0.0083	<0.02[a]	<0.01	—
Aroclor 1242	<0.3[a]	<50[a]	<0.3[a]	<0.3[a]	<0.3[a]	<0.4[a]	<0.45[a]	<0.43[a]	<0.4[a]	<0.1[a]	<0.2[a]	<0.01	<0.0083	<0.02[a]	<0.01	—
Aroclor 1248	<0.3[a]	<50[a]	<0.3[a]	<0.3[a]	<0.3[a]	<0.4[a]	<0.45[a]	<0.43[a]	<0.4[a]	<0.1[a]	<0.2[a]	<0.01	<0.0083	<0.02[a]	<0.01	—
Aroclor 1254	<0.3[a]	<50[a]	<0.3[a]	<0.3[a]	<0.3[a]	<0.4[a]	<0.45[a]	<0.43[a]	<0.4[a]	<0.1[a]	<0.2[a]	<0.01	<0.0083	<0.02[a]	<0.01	—
Aroclor 1260	<0.3[a]	<50[a]	<0.3[a]	<0.3[a]	<0.3[a]	<0.4[a]	<0.45[a]	<0.43[a]	<0.4[a]	<0.1[a]	<0.2[a]	<0.01	<0.0083	<0.02[a]	<0.01	—
Total PCB	<0.3[a]	<50[a]	<0.3[a]	<0.3[a]	<0.3[a]	<0.4[a]	<0.45[a]	<0.43[a]	<0.4[a]	<0.1[a]	<0.2[a]	<0.01	<0.0083	<0.02[a]	<0.01	0.014
Extractable Petroleum Hydrocarbon (EPH) Ranges (ug/kg):	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA					
C9-C18 Aliphatics										<110		<110	<110	<100	<100	NE
C19-C36 Aliphatics										<110		<110	<110	<100	<100	NE
C11-C22 Aromatics										<110		<110	<110	<100	<100	NE
Semivolatiles by GC/MS by 8270 (SIMS) (ug/L):	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA					
Acenaphthene										<1.1		<1.1	<1.1	<1	<1	520
Acenaphthylene										<1.1		<1.1	<1.1	<1	<1	NE
Anthracene										<1.1		<1.1	<1.1	<1	<1	NE
Benzo[a]anthracene										<1.1		<1.1	<1.1	<1	<1	NE
Benzo[a]pyrene										0.22		<0.22	<0.21	<0.2	<0.2	NE
Benzo[b]fluoranthene										<1.1		<1.1	<1.1	<1	<1	NE
Benzo[g,h,i]perylene										<0.56		<0.56	<0.53	<0.5	<0.5	NE
Benzo[k]fluoranthene										<1.1		<1.1	<1.1	<1	<1	NE
Chrysene										<1.1		<1.1	<1.1	<1	<1	NE
Dibenz[a,h]anthracene										<0.56		<0.56	<0.53	<0.5	<0.5	NE
Fluoranthene										<1.1		<1.1	<1.1	<1	<1	NE
Fluorene										<1.1		<1.1	<1.1	<1	<1	NE
Indeno[1,2,3-cd]pyrene										<0.56		<0.56	<0.53	<0.5	<0.5	NE
Phenanthrene										<1.1		<1.1	<1.1	<1	<1	6.3
Pyrene										<1.1		<1.1	<1.1	<1	<1	NE
2-Methylnaphthalene										<1.1		<1.1	<1.1	<1	<1	NE
Naphthalene										<1.1		<1.1	<1.1	<1	<1	620

Where necessary, the MADEP standards have been converted from ppm to ppb, or vice-versa, to match the laboratory reporting method.

NA: Not applicable

<x: Indicates analyte concentration not detected at or above specified laboratory quantitation limit (x)

Sample Results:

a: Although the analyte was not detected, the laboratory quantitation limit for this sample exceeds the applicable MADEP standard.

4.1.4 Groundwater

To evaluate for potential impacts to groundwater from the subject release, on April 22, 2002 *SAGE* installed three monitor wells on the Site. The first monitor well (MW-1) was located directly downgradient (east) of the former Expo Building to evaluate potential impacts from seepage of contaminated runoff into the building's basement and other conduits. The second monitor well (MW-2) was located to evaluate potential impacts from runoff seepage adjacent to a major drainage swale outfall at the parking lot edge. The third monitor well (MW-3), located within ten (10) feet of the stream, was intended to evaluate potential groundwater impacts immediately downstream of the area of immediate runoff and infiltration impact. In addition, groundwater samples were collected from an existing two-inch monitor well (MW-EX), which *SAGE* had discovered in the lower parking lot within the area of runoff impact. Monitor well locations are depicted on **Figure 3**. Test boring and monitor well construction logs are included in **Appendix 4**.

Groundwater samples were collected from the four on-Site monitor wells on May 1, 2002. Samples were collected using dedicated, disposable bailers. Prior to sample collection, groundwater depths were gauged and each well was purged of at least three well volumes of water. Groundwater samples were collected and stored in analyte-specific glass containers. Samples were submitted to a Massachusetts-certified laboratory for analysis for PCBs via EPA Method 8082 and EPH ranges and target analytes using the MADEP methods. Laboratory analytical reports including Chain-of-Custody documentation are included in **Appendix 5**. Laboratory results, summarized in **Table 11**, revealed no concentrations of PCBs or EPH constituents above method detection limits or applicable Method 1 standards.

Table 11
Groundwater Analytical Results – PCBs and EPHs
May, 2002
93-123 Williams Street
North Dighton, Massachusetts

Sample / Date	Concentration				MADEP Method 1 Standard		MADEP Method 3 Groundwater UCL
	MW-1	MW-2	MW-3	MW-EX	GW-2 Groundwater	GW-3 Groundwater	
Analyte	5/1/2002	5/1/2002	5/1/2002	5/1/2002			
Extractable Petroleum Hydrocarbon (EPH) (ug/L):	ND	ND	ND	ND	NA	NA	NA
PCB's by 8082 (ug/L):	<0.21	<0.22	<0.22	<0.20	NA	0.3	5

Where necessary, the MADEP standards have been converted from ppm to ppb, or vice-versa, to match the laboratory reporting method.

ND: No analytes detected above quantitation limits

<x: Indicates analyte concentration not detected at or above specified laboratory quantitation limit (x)

NA = Not applicable

SAGE ENVIRONMENTAL

On September 19, 2001, *SAGE* collected a sample of surface water runoff which had accumulated in the bottom of an electric manhole located along the north side of the former Expo Building. The manhole appeared to have a solid concrete bottom, and the fact that the water had accumulated in the bottom, well above the groundwater elevation, indicated that the water in the manhole was likely not released to the environment. Laboratory analysis of the runoff sample revealed 420 ug/L of PCBs (as only Arochlor 1254), significantly in excess of the Method 1, GW-3 standard of 0.3 ug/L. Before additional investigations could be conducted, the manhole was excavated and removed during building demolition sometime in the period from February-March 2002.

However, in order to evaluate objectionable impacts from runoff seepage to soil and/or groundwater, on November 11, 2002 *SAGE* installed two soil borings completed as monitor wells adjacent to the location of the former electric manhole. Prior to drilling, the location of the former manhole was determined using a Trimble Model TSC1 global positioning unit. The first monitor well, MW-4, was located approximately 10 feet northeast of the former manhole. The second monitor well, MW-5, was located approximately 10 feet southeast of the former manhole. Detailed classifications and descriptions of recovered soils, along with field screening results, are included in the Soil Boring Logs in **Appendix 4**.

Groundwater samples were collected from the two monitor wells on November 18, 2002. Samples were collected using dedicated, disposable bailers. Prior to sample collection, groundwater depths were gauged and each well was purged of at least three well volumes of water. Groundwater samples were collected and stored in analyte-specific glass containers. Samples were submitted to a Massachusetts-certified laboratory for analysis for PCBs via EPA Method 8082. Laboratory analytical reports including Chain-of-Custody documentation are included as **Appendix 5**. Laboratory results, summarized in **Table 12**, revealed no PCBs above laboratory method detection limits or Method 1 Standards indicating that PCB-containing runoff accumulated in the electric manhole had not impacted groundwater.

Table 12
Groundwater Analytical Results: PCBs, MW-4 and MW-5
Electric Manhole Area
93-123 Williams Street
North Dighton, Massachusetts

Sample / Date	Concentration		MADEP Method 1 Standard		MADEP Method 3 Groundwater UCL
	MW-4	MW-5	GW-2 Groundwater	GW-3 Groundwater	
Analyte	11/18/2002	11/18/2002			
PCB's by 8082 (ug/L):					
Aroclor 1016	<0.22	<0.2	NE	NE	NE
Aroclor 1221	<0.22	<0.2	NE	NE	NE
Aroclor 1232	<0.22	<0.2	NE	NE	NE
Aroclor 1242	<0.22	<0.2	NE	NE	NE
Aroclor 1248	<0.22	<0.2	NE	NE	NE
Aroclor 1254	<0.22	<0.2	NE	NE	NE
Aroclor 1260	<0.22	<0.2	NE	NE	NE
Total PCB	<0.22	<0.2	NE	0.3	5

Where necessary, the MADEP standards have been converted from ppm to ppb, or vice-versa, to match the laboratory reporting method.

NE: No standard is established for the substance

<x: Indicates analyte concentration not detected at or above specified laboratory quantitation limit (x)

On February 24, 2003, *SAGE* installed four test borings in the roadside area at the west portion of the Site. To evaluate potential groundwater impacts by EPHs, boring B-2 was completed as a monitor well, designated as MW-6. Groundwater samples were collected from MW-6 on February 28, 2003, however PCBs were not analyzed during this sampling round, as the contaminant of concern in this location was EPH.

To further evaluate groundwater conditions *SAGE* installed six new monitor wells (MW-6-2 through MW-11) on August 26-27, 2003. MW-6-2 was drilled to replace former monitor well MW-6 which was destroyed during parking lot paving. MW-7 and MW-8 were located within the footprint of the former Expo Center Building to evaluate potential impacts from contaminated fire runoff which may have entered the former building basement. MW-9 and MW-11 were situated to evaluate the area immediately downgradient of the former Expo building, and, MW-10 was located to evaluate potential impacts from a storm water catch basin which is situated within the area of impact by contaminated fire runoff. Monitor well locations are identified on **Figure 3**. Test boring and monitor well logs are included in **Appendix 4**.

Groundwater sampling of all usable monitor wells on the site was performed on September 8, 2003, November 25, 2003, March 25, 2004, and June 23, 2004. All groundwater samples were collected in accordance with MADEP WSC-CAM-VIIA guidelines. Prior to sample collection, groundwater depths were gauged and each well was purged of at least three well volumes of water. Groundwater samples were collected and stored in analyte-specific glass containers. Samples were submitted to a Massachusetts-certified laboratory for analysis for PCBs via EPA Method 8082 and EPH with target analytes using promulgated MADEP QA/QC methods. Laboratory analytical reports including Chain-of-Custody documentation are included as **Appendix 5**.

Laboratory results, summarized in **Tables 13, 14, 15 and 16** revealed no detected concentrations of PCBs in any of the monitor wells. Based on these findings, *SAGE* concludes groundwater on the site has not been impacted by the release of PCBs due to the fire. EPA results are described in **Section 4.2** below.

Table 13
Analytical Summary: Groundwater Samples Collected September 8, 2003
93-123 Williams Street
North Dighton, Massachusetts

Sample / Date	Concentration												MADEP Method 1 Standard		MADEP Method 3 Groundwater UCL
Analyte	MW-EX-2 9/8/2003	MW-6-2 9/8/2003	MW-5 9/8/2003	MW-11 9/8/2003	MW-1 9/8/2003	MW-7 9/8/2003	MW-8 9/8/2003	MW-9 9/8/2003	MW-10 9/8/2003	MW-EX 9/8/2003	MW-2 9/8/2003	MW-3 9/8/2003	GW-2 Groundwater	GW-3 Groundwater	
Extractable Petroleum Hydrocarbon (EPH) (ug/L):															
C9-C18 Aliphatics	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	1000	20000	100000
C19-C36 Aliphatics	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	NE	20000	100000
C11-C22 Aromatics	130	130	<100	180	360	130	<100	120	240	140	<100	<100	50000	30000	100000
Acenaphthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	5000	50000
Acenaphthylene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Anthracene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Benzo[a]anthracene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Benzo[a]pyrene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	NE	3000	30000
Benzo[b]fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Benzo[g,h,i]perylene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NE	3000	30000
Benzo[k]fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Chrysene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Dibenz[a,h]anthracene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NE	3000	30000
Fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	200	3000
Fluorene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Indeno[1,2,3-cd]pyrene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NE	3000	30000
Phenanthrene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	50	3000
Pyrene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
2-Methylnaphthalene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	10000	3000	100000
Naphthalene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	6000	6000	60000
PCB's by 8082 (ug/L):															
Aroclor 1016	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	NE	NE	NE
Aroclor 1221	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	NE	NE	NE
Aroclor 1232	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	NE	NE	NE
Aroclor 1242	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	NE	NE	NE
Aroclor 1248	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	NE	NE	NE
Aroclor 1254	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	NE	NE	NE
Aroclor 1260	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	NE	NE	NE
Total PCB	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	<0.4[t]	NE	0.3	5

Where necessary, the MADEP standards have been converted from ppm to ppb, or vice-versa, to match the laboratory reporting method.

NE: No standard is established for the substance

<x: Indicates analyte concentration not detected at or above specified laboratory quantitation limit (x)

Sample Results:

: Analyte concentration in this sample exceeds the MADEP standard for

l: Although the analyte was not detected, the laboratory quantitation limit for this sample exceeds the MADEP standard for GW3 type groundwater

t: Although the analyte was not detected, the laboratory quantitation limit for the sample exceeds a MADEP Reportable Concentration

Table 14
Analytical Summary: Groundwater Samples Collected November 25, 2003
93-123 Williams Street
North Dighton, Massachusetts

Sample / Date	Concentration												MADEP Method 1 Standard		MADEP Method 3 Groundwater UCL
Analyte	MW-3 11/25/2003	MW-2 11/25/2003	MW-EX 11/25/2003	MW-10 11/25/2003	MW-1 11/25/2003	MW-8 11/25/2003	MW-5 11/25/2003	MW-4 11/25/2003	MW-11 11/25/2003	MW-9 11/25/2003	MW-7 11/25/2003	MW-6-2 11/25/2003	GW-2 Groundwater	GW-3 Groundwater	
Extractable Petroleum Hydrocarbon (EPH) (ug/L):								NA							
C9-C18 Aliphatics	<110	<100	<100	<100	<100	<100	<100		<110	<110	<100	<110	1000	20000	100000
C19-C36 Aliphatics	<110	<100	210	140	<100	140	<100		<110	<110	<100	<110	NE	20000	100000
C11-C22 Aromatics	120	120	120	200	<100	<100	<100		<110	<110	140	<110	50000	30000	100000
Acenaphthene	<1.1	<1	<1	<1	<1	<1	<1		<1.1	<1.1	<1	<1.1	NE	5000	50000
Acenaphthylene	<1.1	<1	<1	<1	<1	<1	<1		<1.1	<1.1	<1	<1.1	NE	3000	30000
Anthracene	<1.1	<1	<1	<1	<1	<1	<1		<1.1	<1.1	<1	<1.1	NE	3000	30000
Benzo[a]anthracene	<1.1	<1	<1	<1	<1	<1	<1		<1.1	<1.1	<1	<1.1	NE	3000	30000
Benzo[a]pyrene	<0.21	<0.21	<0.2	<0.2	<0.2	<0.21	<0.21		<0.22	<0.23	<0.2	<0.22	NE	3000	30000
Benzo[b]fluoranthene	<1.1	<1	<1	<1	<1	<1	<1		<1.1	<1.1	<1	<1.1	NE	3000	30000
Benzo[g,h,i]perylene	<0.53	<0.52	<0.5	<0.5	<0.5	<0.53	<0.53		<0.56	<0.57	<0.5	<0.54	NE	3000	30000
Benzo[k]fluoranthene	<1.1	<1	<1	<1	<1	<1	<1		<1.1	<1.1	<1	<1.1	NE	3000	30000
Chrysene	<1.1	<1	<1	<1	<1	<1	<1		<1.1	<1.1	<1	<1.1	NE	3000	30000
Dibenz[a,h]anthracene	<0.53	<0.52	<0.5	<0.5	<0.5	<0.53	<0.53		<0.56	<0.57	<0.5	<0.54	NE	3000	30000
Fluoranthene	<1.1	<1	<1	<1	<1	<1	<1		<1.1	<1.1	<1	<1.1	NE	200	3000
Fluorene	<1.1	<1	<1	<1	<1	<1	<1		<1.1	<1.1	<1	<1.1	NE	3000	30000
Indeno[1,2,3-cd]pyrene	<0.53	<0.52	<0.5	<0.5	<0.5	<0.53	<0.53		<0.56	<0.57	<0.5	<0.54	NE	3000	30000
Phenanthrene	<1.1	<1	<1	<1	<1	<1	<1		<1.1	<1.1	<1	<1.1	NE	50	3000
Pyrene	<1.1	<1	<1	<1	<1	<1	<1		<1.1	<1.1	<1	<1.1	NE	3000	30000
2-Methylnaphthalene	<1.1	<1	<1	<1	<1	<1	<1		<1.1	<1.1	<1	<1.1	10000	3000	100000
Naphthalene	<1.1	<1	<1	<1	<1	<1	<1		<1.1	<1.1	<1	<1.1	6000	6000	60000
PCB's by 8082 (ug/L):															
Aroclor 1016	<0.0087	<0.01	<0.01	<0.0083	<0.0083	<0.0083	<0.011	<0.01	<0.008	<0.009	<0.0088	<0.0091	NE	NE	NE
Aroclor 1221	<0.0087	<0.01	<0.01	<0.0083	<0.0083	<0.0083	<0.011	<0.01	<0.008	<0.009	<0.0088	<0.0091	NE	NE	NE
Aroclor 1232	<0.0087	<0.01	<0.01	<0.0083	<0.0083	<0.0083	<0.011	<0.01	<0.008	<0.009	<0.0088	<0.0091	NE	NE	NE
Aroclor 1242	<0.0087	<0.01	<0.01	<0.0083	<0.0083	<0.0083	<0.011	<0.01	<0.008	<0.009	<0.0088	<0.0091	NE	NE	NE
Aroclor 1248	<0.0087	<0.01	<0.01	<0.0083	<0.0083	<0.0083	<0.011	<0.01	<0.008	<0.009	<0.0088	<0.0091	NE	NE	NE
Aroclor 1254	<0.0087	<0.01	<0.01	<0.0083	<0.0083	<0.0083	<0.011	<0.01	<0.008	<0.009	<0.0088	<0.0091	NE	NE	NE
Aroclor 1260	<0.0087	<0.01	<0.01	<0.0083	<0.0083	<0.0083	<0.011	<0.01	<0.008	<0.009	<0.0088	<0.0091	NE	NE	NE
Total PCB	<0.0087	<0.01	<0.01	<0.0083	<0.0083	<0.0083	<0.011	<0.01	<0.008	<0.009	<0.0088	<0.0091	NE	0.3	5

Where necessary, the MADEP standards have been converted from ppm to ppb, or vice-versa, to match the laboratory reporting method.

NA: Analysis not performed

NE: No standard is established for the substance

<x: Indicates analyte concentration not detected at or above specified laboratory quantitation limit (x)

Note: MW-4 had insufficient water column to analyze for EPHs

Table 15
Analytical Summary: Groundwater Samples Collected March 25, 2004
93-123 Williams Street
North Dighton, Massachusetts

Sample / Date	Concentration											MADEP Method 1 Standard		MADEP Method 3 Groundwater UCL
Analyte	MW-6-2 3/25/2004	MW-5 3/25/2004	MW-7 3/25/2004	MW-8 3/25/2004	MW-9 3/25/2004	MW-11 3/25/2004	MW-1 3/25/2004	MW-10 3/25/2004	MW-EX 3/25/2004	MW-2 3/25/2004	MW-3 3/25/2004	GW-2 Groundwater	GW-3 Groundwater	
Extractable Petroleum Hydrocarbon (EPH) (ug/L):														
C9-C18 Aliphatics	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	1000	20000	100000
C19-C36 Aliphatics	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	NE	20000	100000
C11-C22 Aromatics	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	50000	30000	100000
Acenaphthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	5000	50000
Acenaphthylene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Anthracene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Benzo[a]anthracene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Benzo[a]pyrene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NE	3000	30000
Benzo[b]fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Benzo[g,h,i]perylene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NE	3000	30000
Benzo[k]fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Chrysene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Dibenz[a,h]anthracene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NE	3000	30000
Fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	200	3000
Fluorene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Indeno[1,2,3-cd]pyrene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NE	3000	30000
Phenanthrene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	50	3000
Pyrene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
2-Methylnaphthalene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	10000	3000	100000
Naphthalene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	6000	6000	60000
PCB's by 8082 (ug/L):														
Aroclor 1016	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	NE	NE	NE
Aroclor 1221	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	NE	NE	NE
Aroclor 1232	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	NE	NE	NE
Aroclor 1242	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	NE	NE	NE
Aroclor 1248	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	NE	NE	NE
Aroclor 1254	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	NE	NE	NE
Aroclor 1260	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	NE	NE	NE
Total PCB	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	NA	0.3	5

Where necessary, the MADEP standards have been converted from ppm to ppb, or vice-versa, to match the laboratory reporting method.

NE: No standard is established for the substance

<x: Indicates analyte concentration not detected at or above specified laboratory quantitation limit (x)

Table 16
Analytical Summary: Groundwater Samples Collected June 23, 2004
93-123 Williams Street
North Dighton, Massachusetts

Sample / Date / Analyte	Concentration MW-1 6/23/2004	MW-2 6/23/2004	MW-3 6/23/2004	MW-5 6/23/2004	MW-6 6/23/2004	MW-7 6/23/2004	MW-8 6/23/2004	MW-9 6/23/2004	MW-10 6/23/2004	MW-11 6/23/2004	MW-EX 6/23/2004	MW-17 6/23/2004	MADEP Method 1 Standard GW-2 Groundwater	GW-3 Groundwater	MADEP Method 3 Groundwater UCL
Extractable Petroleum Hydrocarbon (EPH) (ug/L):															
C9-C18 Aliphatics	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	1000	20000	100000
C19-C36 Aliphatics	<100	160	<100	<100	<100	<100	<100	<100	<100	<100	200	<100	NE	20000	100000
C11-C22 Aromatics	<100	250	<100	<100	<100	<100	210	<100	<100	150	210	<100	50000	30000	100000
Acenaphthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	5000	50000
Acenaphthylene	<1	1.5	<1	<1	<1	<1	1.4	<1	<1	1.6	2.2	<1	NE	3000	30000
Anthracene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Benzo[a]anthracene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.3	<1	NE	3000	30000
Benzo[a]pyrene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.62	<0.2	NE	3000	30000
Benzo[b]fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	<1	NE	3000	30000
Benzo[g,h,i]perylene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NE	3000	30000
Benzo[k]fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Chrysene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Dibenz[a,h]anthracene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NE	3000	30000
Fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	200	3000
Fluorene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Indeno[1,2,3-cd]pyrene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NE	3000	30000
Phenanthrene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	50	3000
Pyrene	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	1.5	<1	NE	3000	30000
2-Methylnaphthalene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	10000	3000	100000
Naphthalene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	6000	6000	60000
PCB's by 8082 (ug/L):															
Aroclor 1016	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
Aroclor 1221	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
Aroclor 1232	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
Aroclor 1242	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
Aroclor 1248	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
Aroclor 1254	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
Aroclor 1260	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
Total PCB	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	NE	0.3	5

Where necessary, the MADEP standards have been converted from ppm to ppb, or vice-versa, to match the laboratory reporting method.

NE: No standard is established for the substance

<x: Indicates analyte concentration not detected at or above specified laboratory quantitation limit (x)

: Analyte concentration in this sample exceeds the MADEP standard for

: Although the analyte was not detected, the laboratory quantitation limit for this sample exceeds the MADEP standard for

4.2 EPHs

4.2.1 Sediment

Eight of the 27 pre-excavation sediment samples collected by *SAGE* during September 17 through September 20, 2001 were submitted to a Massachusetts-certified laboratory for analysis of EPHs. With consideration to these data, detected concentrations of C19-C36 aliphatics, C11-C22 aromatics, and several polycyclic aromatic hydrocarbon (PAH) constituents were observed in all of the samples. The concentration of one or more PAHs exceeded the MADEP Threshold Effects Concentrations (TECs) at six of the eight sediment sample locations. Laboratory results are summarized on **Table 17** and the sample locations are depicted on **Figure 3**. Laboratory reports and chain of custody documentation are included in **Appendix 3** (note that some of the chains of custody have improperly identified the sampled media as "soil" and not as "sediment").

The on-site drainage swales and the intermittent stream are fed by storm runoff from the site parking lot and roadways. As such, a significant component of the EPHs observed in on-site sediments would be attributable to impacts by non-regulated storm runoff rather than the transformer spill in question. To establish background concentrations for EPHs due to stormwater runoff alone, on November 2 through November 5, 2001 *SAGE* collected sediment samples from twelve (12) locations in drainage channels in the vicinity of the property which were not impacted by runoff from the fire. An additional three (3) background samples were collected from drainages north of the Site on May 13, 2003. Using data from these fifteen background samples, the 90th Percentile of Background Concentration was calculated for each EPH constituent. Where a constituent concentration was below analytical detection limits, 1/2 of the analytical detection limit was used to calculate the 90th Percentile. Laboratory results and the calculated 90th Percentile concentrations are summarized on **Table 18**.

Table 17
Pre-excavation Sediment Analytical Results – EPHs
93-123 Williams Street
North Dighton, Massachusetts

Sample / Date	Concentration																						Threshold Effects Concentrations	90th Percentile of Background 1 to 15
	SSW-1 (0-1")	MSW-1 (0-1")	NSW-1 (0-1")	MSW-2A	MSW-2B	MSW-2C	SP-1	SP-2	SP-3	SP-4	SW-4A	SW-4B	SW-4C	SP-5	SW-5A	SW-5B	SW-5C	SW-5D	SP-6A	SP-7	SP-8	SP-9	SP-10	
Analyte	9/17/01	9/17/01	9/17/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01	9/20/01	9/20/01	9/20/01	9/20/01	9/20/01		
Extractable Petroleum Hydrocarbon (EPH) (ug/kg):				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA							
C9-C18 Aliphatics	<13,000	**180,000**	**44,000**																**120,000**	**110,000**	<26,000	**670,000**	**880,000**	NE	*17000*
C19-C36 Aliphatics	86,000	**400,000**	**170,000**																**220,000**	**350,000**	35,000	**620,000**	**1,800,000**	NE	*104400*
C11-C22 Aromatics	**340,000[a]**	**1,300,000[ac]**	**640,000[a]**																**760,000[a]**	**670,000[a]**	69,000	**2,900,000[ac]**	**4,700,000[ac]**	NE	*296000*
Acenaphthene	<130	160	<100																260	<200	<260	**560**	**770**	NE	*320*
Acenaphthylene	<130	**150**	<100																<120	**410**	<260	**2,300**	**3,900**	NE	*135*
Anthracene	<130	260	<100																190	270	320	630	900	57.2	*1068*
Benzo[a]anthracene	390	**1,600[ac]**	110																560	650	**1,900[ac]**	610	550	108	*1680*
Benzo[a]pyrene	310	**1,100[ac]**	<100																400	680	**1,300[ac]**	<480	<390	150	*808*
Benzo[b]fluoranthene	480	**1,900[ac]**	120																640	1,000	**1,900[ac]**	620	500	NE	*1160*
Benzo[g,h,i]perylene	170	**460**	<100																**300**	<200	<260	<480	<390	NE	*284*
Benzo[k]fluoranthene	310	**950**	<100																280	**680**	**1,400**	<480	<390	NE	*506*
Chrysene	640	**2,400**	210																500	1,000	1,600	820	740	166	*1700*
Dibenz[a,h]anthracene	<130	**230**	<100																130	<200	**610**	<480	<390	33	*170*
Fluoranthene	1,600	5,200	400																1,800	2,300	4,900	2,400	2,700	423	*5260*
Fluorene	<130	260	<100																400	**460**	<260	**1,300**	**2,000**	77.4	*446*
Indeno[1,2,3-cd]pyrene	170	**500**	<100																<120	**560**	**1,200[ac]**	<480	<390	NE	*314*
Phenanthrene	830	2,700	360																1,200	2,200	1,500	3,100	4,400	204	*4440*
Pyrene	1,200	3,900	400																1,400	1,800	4,000	2,000	2,500	195	*4340*
2-Methylnaphthalene	<130	<120	<100																<120	**250**	<260	**1,100**	**2,000**	NE	*135*
Naphthalene	<130	<120	<100																<120	**500**	<260	**3,100**	**5,400 [ac]**	176	170

Where necessary, the MADEP standards have been converted from ppm to ppb, or vice-versa, to match the laboratory reporting method.

<x: Indicates analyte concentration not detected at or above specified laboratory quantitation limit (x)
NA: Not analyzed
Bolded values indicate an exceedance of the applicable Suitably Analogous Standard or Background Concentration
Naphthalene & 2-methylnaphthalene were never detected in any background samples or confirmatory samples.
SSW=South Swale
MSW=Middle Swale
NSW=North Swale
SP=Sample Point in stream

Table 18
Analytical Summary: Background Sediment Samples, EPHs
93-123 Williams Street
North Dighton, Massachusetts

Sample / (Depth) / Date	Concentration															90th Percentile of Background Concentrations	Threshold Effects Concentrations (TECs)
Analyte	BK-1 11/2/2001	BK-2 11/2/01	BK-3 11/2/01	BK-4 11/2001	BK-5 11/2/01	BK-6 11/2/01	BK-7 11/5/01	BK-8 11/5/01	BK-9 11/5/01	BK-10 11/5/01	BK-11 11/5/01	BK-12 11/5/01	BK-13 5/13/03	BK-14 5/13/03	BK-15 5/13/03		
Extractable Petroleum Hydrocarbon (EPH) (ug/kg):																	
C9-C18 Aliphatics	*5000*	*7000*	*5500*	*7500*	*7000*	*8000*	*7000*	*15500*	*10500*	*6500*	*7000*	*8500*	*18000*	*7000*	32000	17000	NE
C19-C36 Aliphatics	18000	43000	*5500*	*7500*	*7000*	*8000*	65000	110000	*10500*	*6500*	67000	21000	96000	33000	380000	104400	NE
C11-C22 Aromatics	97000	140000	33000	44000	47000	26000	200000	320000	26000	27000	260000	53000	50000	130000	930000	296000	NE
Acenaphthene	*50*	*70*	*55*	*75*	*70*	*80*	*70*	*155*	*105*	*65*	200	*85*	*180*	480	400	320	NE
Acenaphthylene	*50*	*70*	*55*	*75*	*70*	*80*	*70*	*155*	*105*	*65*	*70*	*85*	*180*	*70*	*90*	135	NE
Anthracene	*50*	*70*	*55*	*75*	*70*	*80*	*70*	*155*	*105*	*65*	1300	*85*	*180*	1200	870	1068	57.2
Benzo[a]anthracene	180	150	*55*	*75*	180	*80*	320	580	*105*	*65*	1800	*85*	*180*	4900	1500	1680	108
Benzo[a]pyrene	120	*70*	*55*	*75*	170	*80*	210	520	*105*	*65*	960	*85*	*180*	2200	580	808	150
Benzo[b]fluoranthene	240	170	*55*	*75*	310	*80*	480	950	*105*	*65*	1300	*85*	*180*	4300	950	1160	NE
Benzo[g,h,i]perylene	*50*	*70*	*55*	*75*	*70*	*80*	*70*	*155*	*105*	*65*	340	*85*	*180*	780	200	284	NE
Benzo[k]fluoranthene	*50*	*70*	*55*	*75*	*70*	*80*	170	380	*105*	*65*	590	*85*	*180*	1600	370	506	NE
Chrysene	230	210	*55*	*75*	270	*80*	450	910	*105*	*65*	1700	*85*	*180*	6600	1700	1700	166
Dibenz[a,h]anthracene	*50*	*70*	*55*	*75*	*70*	*80*	*70*	*155*	*105*	*65*	*70*	*85*	*180*	220	*90*	170	33
Fluoranthene	360	380	120	170	600	*80*	1100	2300	*105*	*65*	4300	*85*	*180*	23000	5900	5260	423
Fluorene	*50*	*70*	*55*	*75*	*70*	*80*	*70*	*155*	*105*	*65*	440	*85*	*180*	590	450	446	77.4
Indeno[1,2,3-cd]pyrene	*50*	*70*	*55*	*75*	*70*	*80*	*70*	*155*	*105*	*65*	390	*85*	*180*	870	200	314	NE
Phenanthrene	220	220	*55*	*75*	220	*80*	540	990	*105*	*65*	4600	*85*	*180*	11000	4200	4440	204
Pyrene	350	370	170	150	480	80	900	1800	*105*	65	4100	85	*180*	17000	4500	4340	195
2-Methylnaphthalene	*50*	*70*	*55*	*75*	*70*	*80*	*70*	*155*	*105*	*65*	*70*	*85*	*180*	*70*	*90*	135	NE
Naphthalene	*50*	*70*	*55*	*75*	*70*	*80*	*70*	*155*	*105*	*115*	*70*	*85*	*180*	*70*	190	170	176
Total PAHs	122200	192270	45115	60445	63930	43360	276800	455325	48785	41155	356300	83945	167060	244950	1364280	440336	1610

NE: None established
Naphthalene & 2-methylnaphthalene were never detected in any background samples or confirmatory samples.
Dibenz[a,h]anthracene was never detected in any background sample with the exception of BK-14 sampled on 5/13/03.
Italics indicate value reported is 1/2 of detection limit.

Based on the analysis of sediment samples collected from the fifteen (15) locations, EPHs are ubiquitous as "background" within area sediments. The C11-C22 aromatics are the most widespread and elevated of carbon fractions. Several PAHs, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, fluoranthene, phenanthrene, and pyrene were also detected locally. The presence of these PAH is consistent with runoff from parking lots paved with bituminous concrete and subject to PAH resulting from the partially combusted particulate matter in the exhaust from automobile internal combustion engines, which is excepted from the MCP definition of "release" at 310 CMR 40.0006.

On November 14, 2001, following the completion of initial sediment excavation activities, *SAGE* collected confirmatory post-excavation sediment samples from three to six inches in depth from eight representative locations in the swales and the intermittent stream. To provide additional data, an additional three locations in the intermittent stream were later sampled on March 15, 2002. The samples were submitted to a Massachusetts-certified laboratory for laboratory analysis of EPHs ranges and target analytes using the MADEP methods. Laboratory results are summarized on **Table 19** and the sample locations are depicted on **Figure 3**. Laboratory reports and chain of custody documentation are included in **Appendix 3**.

In general, the post-excavation laboratory results indicated an overall fourfold to tenfold decrease in EPH constituent concentrations following sediment excavation. However, an initial analysis of the data indicated that some EPH constituent concentrations, particularly the C11-C22 aromatic fraction in the middle drainage swale (location MSW-1, sample PE-MSW-1 dated 11/14/01) and the lower downstream area (location SP-1, sample PE-SP-1 dated 11/14/01), were significantly greater than the highest observed background constituent concentrations that were currently available (only 12 background samples were available at that time).

In view of these results, an additional three inches of sediment was subsequently excavated from these areas on July 26, 2002 (at MSW-1) and August 2, 2002 (at SP-1). Excavation was performed manually with shovels by Frank Corporation of New Bedford, Massachusetts. Following excavation, post excavation ("PE") confirmatory samples were again collected and analyzed for EPHs. Laboratory results indicated that EPH constituent concentrations were now below the 90th percentile of background at these two locations. The post-excavation analytical data for locations MSW-1 (sample PE-MSW-1 dated 11/14/01) and SP-1 (sample PE-SP-1 dated 11/14/01) are included on **Table 19**.

On May 13, 2003 three additional sediment background samples (BK-13, BK-14, and BK-15) were collected from the north portion of the site area. In addition, to confirm existing site conditions six additional confirmatory samples were collected from key locations in the drainage swales and the stream. Laboratory results for the additional

background samples were summarized previously on **Table 18**. Analytical data for the six confirmatory samples from the swales and stream are summarized on **Table 20**.

Table 19
Post-excavation Sediment Analytical Results – EPH
November 2001 through August 2002
93-123 Williams Street
North Dighton, Massachusetts

Sample / (Depth) / Date	Concentration													Threshold Effects Concentration	90th Percentile of Background
	PE-NSW-1	PE-MSW-1	PE-SS-1	PE-SP-6A	PE-SP-7	PE-SP-8	PE-SP-9	PE-SP-10	3050'	3250'	SP-1	PE-MSW-1 (0-3")	PE-SP-1 (0-3")		
Analyte	**11/14/01**	**11/14/01**	**11/14/01**	**11/14/01**	**11/14/01**	**11/14/01**	**11/14/01**	**11/14/01**	**3/15/02**	**3/15/02**	**3/15/02**	**7/26/02**	**8/2/02**		
Extractable Petroleum Hydrocarbon (EPH) (ug/kg):															
C9-C18 Aliphatics	<12000	**25000**	<13000	<14000	<13000	<13000	<13000	<13000	<12000	<19000	<46000	<11000	<11000	—	17000
C19-C36 Aliphatics	33000	64000	24000	18000	<13000	<13000	<13000	<13000	<12000	53000	**170000**	23000	<11000	—	104400
C11-C22 Aromatics	100000	**330000**	94000	62000	36000	51000	44000	40000	63000	170000	**380000**	180000	38000	—	296000
2-Methylnaphthalene	<120	**270**	<130	<140	<130	<130	<130	<130	<120	<190	<4560	<110	<110	—	135
Acenaphthene	<120	210	<130	<140	<130	<130	<130	<130	<120	<190	<460	<110	<110	—	320
Anthracene	<120	740	340	220	<130	<130	<130	<130	<120	<190	<460	<110	<110	57.2	1068
Benzo[a]anthracene	300	**2600**	1600	1000	290	360	430	320	<120	<190	<460	360	<110	108	1680
Benzo[a]pyrene	350	**2400**	**1300**	800	240	320	370	260	<120	<190	<460	330	<110	150	808
Benzo[b]fluoranthene	440	**2800**	**1400**	1000	270	380	430	260	130	<190	<460	430	<110	—	1160
Benzo[g,h,i]perylene	240	**620**	**340**	210	<130	<130	<130	<130	<120	<190	<460	130	<110	—	284
Benzo[k]fluoranthene	350	**2300**	**1400**	**700**	220	320	380	320	<120	<190	<460	430	<110	—	506
Chrysene	460	**3200**	**1800**	1200	340	470	520	400	140	<190	<460	620	<110	166	1700
Dibenz[a,h]anthracene	<120	**370**	**220**	<140	<130	<130	<130	<130	<120	<190	<460	<110	<110	—	170
Fluoranthene	810	**5600**	2800	2000	650	1000	1000	820	270	240	<460	1400	<110	—	5260
Indeno[1,2,3-cd]pyrene	<120	**380**	<130	<140	<130	<130	<130	<130	<120	<190	<460	<110	<110	—	314
Naphthalene	240	**770**	**440**	**270**	<130	<130	<130	<130	<120	<190	<460	<110	<110	176	170
Phenanthrene	400	3200	1200	1100	270	460	430	370	<120	<190	<460	600	<110	204	4440
Pyrene	660	**4500**	2300	1700	580	820	840	650	220	220	<460	1100	<110	195	4340

MADEP standards have been converted from ppm to ppb, or vice-versa, to match the laboratory reporting method.
NA: Analysis not performed
ND: No analytes detected above quantitation limits
<x: Indicates analyte concentration not detected at or above specified laboratory quantitation limit (x)
Sample Results:
Bolded values exceed the 90th Percentile Background Concentration.

Table 20
Analytical Summary: Post Excavation Sediment Samples, EPHs
May 2003
93-123 Williams Street
North Dighton, Massachusetts

Sample / (Depth) / Date / Analyte	Concentration						90th Percentile of Background Concentrations	Threshold Effects Concentrations (TECs)
	PE-NSW-1 5/13/2003	PE-SSW-1 5/13/2003	PE-SP-6 5/13/2003	PE-SP-7 5/13/2003	PE-SP-8 5/13/2003	PE-SP-9 5/13/2003		
Extractable Petroleum Hydrocarbon (EPH) (ug/kg):								
C9-C18 Aliphatics	*5500*	*6000*	*6000*	*8500*	*6500*	*6500*	17000	NE
C19-C36 Aliphatics	**140,000**	71000	*6000*	44000	20000	16000	104400	NE
C11-C22 Aromatics	260000	73000	*6000*	53000	34000	18000	296000	NE
Acenaphthene	*55*	140	*60*	*85*	*65*	*65*	320	NE
Acenapthylene	*55*	*60*	*60*	*85*	*65*	*65*	135	NE
Anthracene	140	250	*60*	*85*	*65*	290	1068	57.2
Benzo[a]anthracene	520	400	*60*	270	670	890	1680	108
Benzo[a]pyrene	280	170	*60*	*85*	310	400	808	150
Benzo[b]fluoranthene	570	300	*60*	300	540	650	1160	NE
Benzo[g,h,i]perylene	*55*	*60*	*60*	*85*	*65*	*65*	284	NE
Benzo[k]fluoranthene	180	*60*	*60*	*85*	220	200	506	NE
Chrysene	880	520	160	450	870	1000	1700	166
Dibenz[a,h]anthracene	*55*	*60*	*60*	*85*	*65*	*65*	170	33
Fluoranthene	2300	2100	510	1100	2600	3300	5260	423
Fluorene	*55*	200	*60*	*85*	*65*	*65*	446	77.4
Indeno[1,2,3-cd]pyrene	*55*	*60*	*60*	*85*	*65*	*65*	314	NE
Phenanthrene	1100	1800	200	470	1100	1400	4440	204
Pyrene	1700	1500	380	920	2000	2500	4340	195
2-Methylnaphthalene	*55*	*60*	*60*	*85*	*65*	*65*	135	NE
Naphthalene	*55*	*60*	*60*	*85*	*65*	*65*	170	176
Total PAHs	413610	157800	20030	109945	69395	51650	440336	1610

Sample Results:
Results in bold indicate an exceedance of the 90th Percentile of Reported Concentrations
Naphthalene & 2-methylnaphthalene were never detected in any background samples or confirmatory samples.
Dibenz[a,h]anthracene was never detected in any background sample with the exception of BK-14 sampled on 5/13/03.
Italics indicate value reported is 1/2 of detection limit.

Based on the analytical results summarized in **Table 20**, one location in the north swale (NSW-1, sample PE-NSW-1) was noted to have a concentration of C19-C36 aliphatics which exceeded the 90th Percentile background concentration. EPH constituents at the other five locations were all below the 90th percentile background concentrations.

Subsequently, additional sediment excavation was performed at location NSW-1 on April 19, 2004. Unrelated PCB-contaminated sediment at another nearby location in the middle swale, MSW-1, was also excavated on the same day. Approximately three inches of sediment was hand excavated from the swale channel over a channel length extending approximately 15 feet at each location. Approximately one drum of sediment and debris combined from both locations was removed. Following excavation, post-excavation confirmatory composite samples were again collected and submitted to a Massachusetts-certified laboratory for analysis for EPHs using promulgated MADEP QA/QC methods. These post-excavation laboratory results are summarized previously in **Table 5**.

Based on the post-excavation ("PE") analytical results, EPH constituents at location NSW-1 had now been reduced to concentrations below the 90th percentile background concentration. Based on the available data, there appear to be no remaining areas in the swale/stream where EPHs are likely to exceed background concentrations in sediment. Response actions with regard to EPHs in sediment thus appear to be complete. Laboratory analytical reports, including chain of custody documentation, are included in **Appendix 3**.

4.2.2 Soil

On March 20, 2002, *SAGE* collected three soil samples from the grass shoulder located approximately twenty (20) feet west of the former Expo Building. The purpose of the sampling was to evaluate potential impacts from transformer oil runoff which flowed in a westerly direction during the September 2001 release. Soil samples were collected from 0 to 1-inch depth using a Teflon hand trowel. Samples were submitted to a Massachusetts-certified laboratory for the analysis of PCBs via EPA Method 8082, EPH ranges and target analytes using the MADEP methods, and asbestos using both EPA-600/M4-82-020 (PLM) and EPA 600/R-93/116 (TEM). Laboratory reports are included in **Appendix 3**. Laboratory results indicated no detected asbestos. The laboratory results for PCBs and EPHs have been summarized previously on **Table 6**.

With consideration to the data in **Table 6**, the level of PAHs was observed to be in excess of the Method 1 S-1 standard in all three samples. The level of C11-C22 aromatics in sample SS-2 (1,600,000 ug/kg) was elevated relative to the highest background concentration observed in nearby sediments (320,000 ug/kg) and the Method 1 S-1/GW-2 standard (800,000 ug/kg). In view of these results, three inches of soil was subsequently

excavated from the SS-2 area on July 26, 2002. Following excavation, a confirmatory sample was collected and analyzed for EPHs and PCBs. Post-excavation laboratory results are summarized on **Table 21**.

Table 21
Post-Excavation Soil Analytical Results: PCBs and EPHs in SS-2 Area
July 26, 2002
93-123 Williams Street
North Dighton, Massachusetts

Sample / (Depth) / Date	Concentration	MADEP Method 1 Standard		MADEP Method 3 Soil UCL
	PE-SS2-0-3"	S-1 / GW-2 Soil	S-1 / GW-3 Soil	
Analyte	7/26/2002			
Extractable Petroleum Hydrocarbon (EPH) (ug/kg):				
C11-C22 Aromatics	630000	800000	800000	10000000
Acenaphthene	500	1000000	1000000	10000000
Anthracene	1500	1000000	1000000	10000000
Benzo[a]anthracene	**12000[bc]**	700	700	100000
Benzo[a]pyrene	**16000[bc]**	700	700	100000
Benzo[b]fluoranthene	**21000[bc]**	700	700	100000
Benzo[g,h,i]perylene	12000	1000000	1000000	10000000
Benzo[k]fluoranthene	**14000[bc]**	7000	7000	400000
Chrysene	**16000[bc]**	7000	7000	400000
Fluoranthene	36000	1000000	1000000	10000000
Fluorene	520	1000000	1000000	10000000
Indeno[1,2,3-cd]pyrene	**12000[bc]**	700	700	100000
Phenanthrene	14000	1000000	100000	10000000
Pyrene	28000	700000	700000	10000000
PCB's by 8082 (ug/kg):	**<1000**	**2000**	**2000**	**2000**

Where necessary, the MADEP standards have been converted from ppm to ppb, or vice-versa, to match the laboratory reporting method.

ND: No analytes detected above quantitation limits
<x: Indicates analyte concentration not detected at or above specified laboratory quantitation limit (x)
Sample Results:
b-c: Analyte concentration in this sample exceeds the MADEP standard for:
b: S1/GW2 type soil
c: S1/GW3 type soil

In view of the above data, the post-excavation soil sample from SS-2 had no detected PCBs but several detected EPHs. The level of C11-C22 aromatics (630,000 ug/kg) was considerably lower than the pre-excavation concentration (1,600,000 ug/kg) and is also lower than the Method 1 S-1/GW-2 standard (800,000 ug/kg). Thirteen (13) PAHs were also detected in the sample. The levels of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, and indeno(1,2,3 cd) pyrene exceeded the applicable Method 1, S-1 standard. It appeared that much of the observed EPH constituents were background contaminants caused by the proximity to the highway and were not likely the

result of a release of transformer oil, but more likely the results of long-term emissions from motor vehicles.

On February 19, 2003, *SAGE* drilled three hand borings in the grass road shoulder. Borings were drilled with a stainless steel hand auger to refusal depth (approximately 1.0 to 1.5 feet). Recovered soils were screened for volatile organic compounds (VOCs) in the field with an HNU Model HW-101 PID using the jar headspace method. The PID was equipped with a 10.2eV lamp and calibrated to an isobutylene standard. In addition, soil samples were screened for total petroleum hydrocarbons (TPHs) via EPA Method 9074 using a Dexsil Petroflag™ soil test kit. This method is suitable for determining the quantitative concentration of TPHs where a high detection limit (10 ppm) is acceptable. Field screening results are summarized in **Table 22**.

On February 24, 2003, *SAGE* installed four test borings in the roadside area. Borings were located north, south, east and west of previous sample location SS-2 which was noted to have elevated EPHs. The east downgradient boring was completed as a groundwater monitor well (MW-6). The location of the test borings and the monitor well is depicted on **Figure 3** and **Figure 4**. Detailed classifications and descriptions of recovered soils are included in the Soil Boring and Monitor well Logs in **Appendix 4**.

Recovered soils were screened for VOCs in the field with a HNU Model HW-101 PID using the jar headspace method. The PID was equipped with a 10.2eV lamp and calibrated to an isobutylene standard. In addition, soil samples were screened for total petroleum hydrocarbons (TPHs) via EPA Method 9074 using a Dexsil Petroflag™ soil test kit. Field screening results are summarized on **Table 22**.

Table 22
Soil Screening Results
Hand Borings and Machine Borings: February, 2003
93-123 Williams Street
North Dighton, Massachusetts

Sample ID No.	Depth (ft.)	PID Reading (ppm)	Petroflag TPH (ppm)
HB SS1	0-1	0.0	162*
	1-2	0.0	130
	2-3	0.0	0
HB SS2	0-1	0.0	69*
	1-2	0.0	14
	2-3	0.0	17*
HB SS3	0-1	0.0	129*
	1-2	0.0	15
	2-3	0.0	4
B1	0 - 2.5	1.0	25**
	2.5 - 5.0	0.6	14
	5.0 - 7.5	0.4	8
	7.5 - 10.0	0.2	24*
	10.0 - 15.0	ND	19
	15.0 - 20.0	ND	11
B2	0 - 2.5	0.9	279*
	2.5 - 5.0	0.2	34
	5.0 - 7.5	0.3	17
	7.5 - 10.0	ND	10
	10.0 - 15.0	ND	1
	15.0 - 20.0	ND	8
B3	0 - 2.5	ND	13**
	2.5 - 5.0	ND	16
	5.0 - 7.5	0.6	21
	7.5 - 10.0	ND	14
	10.0 - 15.0	ND	8
	15.0 - 20.0	ND	8
B4	0 - 2.5	ND	237*
	2.5 - 5.0	ND	17
	5.0 - 7.5	ND	19
	7.5 - 10.0	ND	14
	10.0 - 15.0	ND	24
	15.0 - 20.0	ND	183

All readings taken using HNU model P101 with 10.2 eV lamp
Petroflag analysis based on 9.3°C
ND = None Detected
* = Submitted for lab analysis of EPHs
** = Sample contained visible pavement asphalt and was used for fingerprint analysis

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Based on Petroflag results, selected soil samples from selected hand borings and machine borings were retained for laboratory analysis. The samples were submitted to a Massachusetts-certified laboratory for analysis for EPH. Analytical reports including Chain-of-Custody documentation are included as **Appendix 3**.

To obtain background data for soils, on May 13, 2003 *SAGE* drilled four hand borings (HB BK-1, HB BK-2, HB BK-3 and HB BK-4) in the grass road shoulder outside the area of runoff impact from the fire. Borings were drilled with a stainless steel hand auger to approximately one foot below surface grade. Samples from 0 to 1 foot depth were submitted to a Massachusetts-certified laboratory for analysis for EPHs. To obtain additional background data in soils, on December 5, 2003 *SAGE* drilled eight (8) additional hand borings (HB-BK-5 through HB-BK-12) in the grass road shoulder. These borings were located on both the east and west sides of Williams Street beyond areas of likely runoff impact from the fire. The locations of the borings are depicted on **Figure 3** and **Figure 4**. All soil samples were collected in accordance with in accordance with MADEP's Quality Assurance and Quality Control Guidelines (WSC-CAM-VIIA). These analytical results, including the analytical results from previous background sampling conducted in May, 2003, were used to calculate a 90th Percentile Background Concentration for EPH constituents in soils. All background analytical data and results are summarized on **Table 23**.

On March 28, 2003, three additional hand borings (HB SS-3, HB SS-4, and HB SS-5) were drilled in area of potential impact within the grass road shoulder. Borings were drilled with a stainless steel hand auger to refusal depth (approximately 2.0 to 3.0 feet). Selected samples were submitted to a Massachusetts-certified laboratory for analysis for EPH. The boring locations are depicted on **Figure 3** and **Figure 4**. Analytical reports including Chain-of-Custody documentation are included as **Appendix 3**.

Table 23
Background Soil Samples HB-BK-1 through HB-BK-12
Road Shoulder Area
93-123 Williams Street
North Dighton, Massachusetts

Sample / (Depth) / Date	6Concentration												90th Percentile of Background Concentrations
Analyte	HB-BK-1 5/13/2003	HB-BK-2 5/13/2003	HB-BK-3 5/13/2003	HB-BK-4 5/13/2003	HB-BK-5 12/5/2003	HB-BK-6 12/5/2003	HB-BK-7 12/6/2003	HB-BK-8 12/7/2003	HB-BK-9 12/8/2003	HB-BK-10 12/9/2003	HB-BK-11 12/10/2003	HB-BK-12 12/5/2003	
Extractable Petroleum Hydrocarbon (EPH) (ug/kg):													
C9-C18 Aliphatics	*5500*	*5500*	*5500*	*5500*	*6000*	11000	*6000*	*5500*	*5500*	*5500*	*5000*	*5000*	6000
C19-C36 Aliphatics	41000	41000	35000	45000	29000	33000	*12000*	*11000*	*11500*	68000	540000	74000	73400
C11-C22 Aromatics	100000	77000	43000	60000	27000	54000	51000	37000	*5500*	47000	120000	52000	97700
Acenaphthene	250	*55*	*55*	130	*60*	160	*60*	*55*	*55*	*55*	*50*	*50*	157
Acenapthylene	*55*	*55*	*55*	*55*	*60*	190	120	*55*	*55*	180	200	150	189
Anthracene	640	*55*	180	330	*60*	360	280	*55*	*55*	220	190	140	357
Benzo[a]anthracene	2600	160	760	990	1200	1800	1500	740	*55*	850	1100	910	1770
Benzo[a]pyrene	2100	130	570	600	1200	1800	1400	780	*55*	800	1200	1000	1760
Benzo[b]fluoranthene	3700	220	970	1000	3000	3300	3200	2800	260	2400	2800	2000	3290
Benzo[g,h,i]perylene	920	*55*	230	220	*60*	1500	990	730	*55*	*55*	830	660	983
Benzo[k]fluoranthene	1300	*55*	370	340	770	1000	840	2900	*55*	510	1000	730	1270
Chrysene	3700	190	1000	1200	1500	2700	2000	1100	*55*	1400	2100	1500	2640
Dibenz[a,h]anthracene	*55*	*55*	*55*	*55*	*60*	340	*60*	*55*	*55*	*55*	*50*	*50*	60
Fluoranthene	8600	340	2400	3000	160	5500	3800	1900	160	3100	4000	2800	5350
Fluorene	330	*55*	*55*	170	*60*	140	*60*	*55*	*55*	*55*	*50*	*50*	167
Indeno[1,2,3-cd]pyrene	890	*55*	240	220	*60*	1200	210	160	*55*	180	980	850	971
Phenanthrene	4700	210	1200	1900	1400	2500	1600	700	120	1900	1700	1200	2440
Pyrene	6400	290	1800	2300	3000	5000	3400	1600	140	2400	3700	2400	4870
2-Methylnaphthalene	*55*	*55*	*55*	*55*	*60*	*55*	*60*	*55*	*55*	*55*	*50*	*50*	59.5
Naphthalene	*55*	*55*	*55*	*55*	*60*	*55*	*60*	*55*	*55*	*55*	*50*	*50*	59.5
Total PAHs	182850	125590	93550	123120	74770	125600	88640	67295	23895	134770	685050	145590	203493

Sample Results:
Naphthalene & 2-methylnaphthalene were never detected in any background samples.
Italics indicate value reported is 1/2 of detection limit.

Table 24
Analytical Summary: Soil Samples from Road Shoulder
Compared to 90th Percentile Background and Method 1 Standards with EPC Evaluation
93-123 Williams Street
North Dighton, Massachusetts

Sample / Depth / Date	Pre-excavation																	EPC Evaluation Criteria				EPC
	HB-SS-1, 0-1'	HB-SS-2, 0-1'	HB-SS-3, 2'-3'	HB-SS-3, 9-1'	HB-SS-4, 0'-1'	HB-SS-4, 1'-2'	HB-SS-4, 2'-3'	HB-SS-5, 0-1'	HB-SS-5, 1'-2'	HB-SS-5, 2'-3'	B-1, 2.5'-10'	B-3, 5'-12'	SS-1	SS-5	FE-SS-2 0-3"	90th Percentile of Background Concentration HB-BK-1 through HB-BK-12	MADEP Method 1 Standard		75 % DP ≤ Method 1 (yes/no)	DF HX Method 1 (yes/no)	75 % DP ≤ 90th percentile (yes/no)	DP HX 90th percentile Method 1 (yes/no)	Arithmetic Average (without SS-3 and FE-SS-2) (mg/kg)
Analyte	2/19/2003	2/19/2003	2/19/2003	2/19/2003	3/28/2003	3/28/2003	3/28/2003	3/28/2003	3/28/2003	3/28/2003	2/24/2003	2/24/2003	3/28/2003	3/28/2003	7/26/2003		S-1/GW-2 Soil	S-1/GW-3 Soil					
Extractable Petroleum Hydrocarbon (EPH) (mg/kg)																							
C9-C18 Aliphatics	6000	4500	4400	6000	6900	5000	5500	5500	5500	5500	5500	5500	5500	6600	11400	6000	1000000	1000000					
C19-C36 Aliphatics	22000	6500	5500	6000	36000	14000	14000	22000	16000	5500	5500	5500	67000	32000	75500	73400	2500000	2500000					
C11-C22 Aromatics	120000	69000	52000	75500	9000	22000	18000	70000	15000	5500	5500	16000	200000	290000	630000	97700	800000	800000					
Acenaphthene	160	65	65	80	140	80	55	150	55	55	55	55	55	298	560	157	1000000	1000000					
Acenaphthylene	60	65	65	60	65	50	55	55	55	55	55	55	358	150	155	189	100000	100000					
Anthracene	550	250	65	280	420	55	55	400	55	55	55	55	350	828	1500	557	1000000	1000000					
Benzo(a)anthracene	2300	1400	980	1400	2400	390	360	2200	220	55	55	55	890	4600	*12000	1770	700	700	Y	Y	Y	N	998
Benzo(a)pyrene	1600	1200	550	1200	2200	370	290	1900	200	55	55	55	910	4000	*16000	1760	700	700	Y	Y	Y	N	798
Benzo(b)fluoranthene	2200	1600	550	1400	3500	650	540	3600	370	120	55	55	920	5700	*21000	3290	700	700	Y	Y	Y	N	1285
Benzo(g,h,i)perylene	980	850	180	880	1300	280	210	1100	120	55	55	55	550	1500	12000	985	1000000	1000000					
Benzo(k)fluoranthene	1700	1500	340	1100	1200	210	200	1300	140	55	55	55	840	3700	*14000	1370	70000	7000	Y	N	Y	N	671
Chrysene	3100	2000	550	2100	3500	550	520	3200	300	55	55	55	1000	6000	16000	2640	70000	7000	Y	N	Y	N	1388
Dibenz(a,h)anthracene	330	220	65	270	60	50	55	55	55	55	55	55	260	760	155	60	700	700	Y	N	Y	N	131
Fluoranthene	11000	4900	3400	5600	8300	1200	1000	8200	800	220	55	240	1600	11000	36000	5350	1000000	1000000					
Fluorene	220	65	65	140	200	50	55	190	55	55	55	55	55	350	520	167	1000000	1000000					
Indeno(1,2,3-cd)pyrene	700	600	180	500	780	210	190	1100	55	55	55	55	600	1300	*12000	971	700	700	Y	N	Y	N	509
Phenanthrene	4900	2100	940	3500	5400	550	550	5600	440	55	55	310	500	5300	14000	3640	1000000	1000000					
Pyrene	7800	3600	1000	4100	6900	1100	870	6200	650	180	55	180	1400	8000	28000	4870	700000	700000					
2-Methylnaphthalene	60	65	65	60	60	50	55	55	55	55	55	55	55	60	155	59.5	500000	500000					
Naphthalene	60	65	65	60	60	50	55	55	55	55	55	55	55	60	155	59.5	100000	100000					
Total PAH	185220	100365	81965	109300	84180	40915	42645	158860	40265	17780	17435	26500	262750	382060	845140	305405	--	--					

Sample Results:

Italics indicate value reported is 1/2 of detection limit.

Results in bold indicate an exceedance of the 90th Percentile of Background Concentrations.

Results highlighted in yellow indicate an exceedance of both 90th percentile background concentrations and Method 1 Standards.

Results highlighted in green indicate an exceedance of EPC Evaluation Criteria

Naphthalene and 2-Methylnaphthalene were never detected in any background samples.

Notes:

Sample B-3, 9-2.5' not included in table because sample contained new road asphalt, used for fingerprint analysis.

Sample SS-3, 5/20/2003 not included in table because this soil zone was excavated; see post-excavation sample FE-SS-3.

Sample B-4, 15-17' not included in table because depth was greater than 15 feet.

*= Exceedance of EPC evaluation criteria

All relevant soil analytical data from hand borings and test borings within the arca of impact which was collected in March 2002, July 2002, February 2003, and March 2003 is summarized on **Table 24**. The results are compared to: 1) the 90th Percentile Background Concentration for EPH constituents, and 2) the MADEP Method 1 Standards. Results for fifteen sample locations indicate nine locations within the impacted area where EPH constituents exceeded the 90th Percentile Background Concentration for one or more EPH constituents (see the bolded values on **Table 24**). Five sample locations were identified where EPHs exceeded both the 90th Percentile Background Concentration and the Method 1 Standards (see values highlighted in yellow on **Table 24**).

One sample location at the middle portion of the impacted area, PE-SS-2, was noted to have concentrations of four EPH compounds which were greater than ten times the MADEP Method 1 standard, and thus was judged to meet the MCP definition of "Hot Spot" given at 310 CMR 40.0006. An adjacent sample, SS-3, also had relatively 'elevated' EPH constituent concentrations and exceeded the Method 1 S-1/GW-3 standards.

Assuming that soils within these two "hotspot" areas were removed by excavation, an Exposure Point Concentration (arithmetic average) was calculated using the remaining thirteen data points. The results indicated that even with removal of the two elevated contamination areas, the subsequent Exposure Point Concentration for the EPH target analytes benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene would still exceed the Method 1 Standard for these compounds. Thus it appeared necessary to achieve a condition of no significant risk without the imposition of an Activity and Use Limitation, the entirety of the impacted soil area should be removed. Accordingly, impacted soils to a depth of 1 foot were excavated and disposed on July 21 and July 22, 2004. These activities are described in **Section 5.3** of this report.

4.2.3 Surface Water and Runoff

Limited initial sampling for EPHs in runoff and surface water was conducted on September 19, 2001 and March 15, 2002. One runoff sample from the garage basement was analyzed for semivolatiles via EPA Method 8270. One sample from the intermittent stream at location SP-1 was analyzed for EPHs using MADEP Methods. Chain-of Custody forms and Certificates of analysis are included in **Appendix 3**. Laboratory results are summarized on previous **Table 9.**

With consideration to the data in **Table 9**, seventeen PAHs were detected in the runoff sample from the garage basement. PAHs were not detected in the stream sample from SP-1 however C11-C22 aromatics were noted at 380 ug/L. Although standing water that

collected in the garage basement during and after the fire (prior to building demolition) indicated that there was likely no release to the environment, *SAGE* installed monitoring wells on August 26-27, 2002, and sampled groundwater as described in section 4.1.4 above.

This groundwater testing in the vicinity of the former garage basement indicated no measurable impacts by EPHs to groundwater in this area of the site. Thus *SAGE* concludes that there was no material release of the EPH contaminated fire runoff water to the environment. Subsequent samplings of the intermittent stream at the Tremont Street culvert were conducted on March 15, 2002, September 8, 2003, November 25, 2004, March 25, 2004, and June 23, 2004. These analytical results are summarized on previous **Table 10**. Laboratory results indicated no detected EPH constituents in any of these samples. Based on these findings there appear to have been no long-term impacts by EPHs to the stream.

4.2.4 Groundwater

Groundwater sampling of all usable monitor wells on the site was performed on September 8, 2003, November 25, 2003, March 25, 2004, and June 23, 2004. All groundwater samples were collected in accordance with MADEP WSC-CAM-VIIA guidelines. Prior to sample collection, groundwater depths were gauged and each well was purged of at least three well volumes of water. Groundwater samples were collected and stored in analyte-specific containers. Samples were submitted to a Massachusetts-certified laboratory for analysis for PCBs via EPA Method 8082 and EPH with target analytes using promulgated MADEP QA/QC methods. Laboratory analytical reports including Chain-of-Custody documentation are included as **Appendix 5**.

Laboratory results, summarized in previous **Tables 13, 14, 15 and 16** revealed sporadic low levels of C11-C22 aromatics and/or C19-C36 aliphatics in MW-1, MW-2, MW-3 , MW-6-2, MW-7, MW-8, MW-9, MW-10, MW-11, MW-EX, and MW-EX-2. Only monitor well MW-5 has had no detected EPHs. In all monitor wells the observed constituent concentrations are significantly less than 1/2 the applicable Method 1, GW-2/GW-3 standards. Based on these findings, groundwater on the Site has not been significantly impacted by the release of EPHs. The detected EPH constituents are believed to be background occurrences attributable to historic impacts by non-regulated parking lot runoff rather than to fire water runoff.

4.3 Evidence of Past or Current Environmental Harm / Stage One Environmental Screening

Within one week of the oil spill, *SAGE* personnel observed at least three dead fish, specifically red pickerel (*Esox Americanus*) in the intermittent stream. Dead amphibians, such as frogs, were not apparent. The water in the stream was observed to be extremely turbid due to ash runoff from the fire. It appears likely that anoxic conditions may have locally existed in the stream at that time but field measurements were not collected to verify this. High concentrations of suspended sediment can clog fish gills, causing asphyxiation.

Since the oil release on September 15, 2001, extensive Immediate Response Actions (IRA's) have been completed to remediate the impacts of the oil release. These response actions have included the removal of free oil with absorbant pads/booms and the excavation and disposal of over 120 tons of impacted sediment from the swales and stream bed. *SAGE* personnel visited the site on several occasions in February 2002 through July 2004 since these IRA's were completed. Aside from some dead stumps and a few small trees, which had to be removed to facilitate excavation of the streambed, *SAGE* has observed no evidence of any missing, dead or stressed organisms anywhere on the Site or in areas downstream from the Site. The understory vegetation which was impacted by the excavation activities (e.g., brush, weeds and wildflowers) appears to have quickly recovered to pre-excavation conditions. In addition, wildlife, including amphibians (e.g., frogs observed) and mammals (e.g., deer, as evidenced by tracks) are clearly present in the stream bed ecosystem.

4.4 Sediment Screening Benchmark Concentrations

Since the completion of IRA activities approximately 110 post-excavation sediment samples have been collected from the streambed for PCB and/or EPH analyses. Based on recent post-excavation data collected in March 2003 and April 2004, sampling results indicate that the level of PCBs in sediments has been reduced to concentrations below the MADEP Threshold Effect Concentration (< 59.8 ug/kg) and the level of EPHs has been reduced to concentrations below the 90th Percentile of Background for all EPH constituents. Post-excavation results for PCBs in sediments have been previously summarized in **Tables 3, 4, and 5** of this report. The restoration of EPHs to background levels is discussed in **Section 4.2.1** of this report.

5.0 RECENT IMMEDIATE RESPONSE ACTIONS AND INVESTIGATORY ACTIVITIES

5.1 General Purpose

The primary goal of ongoing IRA's and investigatory activities was to achieve a condition of no significant risk for soils impacted with EPHs within the road shoulder at the west side of the Site.

Based on observed runoff flow patterns and as evidenced by soil analytical data, a small component of transformer oil runoff discharged to the west onto soils within a grass road shoulder which borders Williams Street. As indicated by several areas with EPH constituent concentrations above 90th percentile background concentrations, the extent of significant soil impact extended for approximately 250 to 260 feet. Because the road shoulder is a common easement area owned by the Town of Dighton, implementation of an Activity and Use Limitation would be problematic. Excavation of the impacted soil was thusly chosen as the selected remedial alternative, which was performed as an Immediate Response Action.

In addition, a final round of groundwater monitoring was performed on all available monitor wells to confirm current groundwater conditions on the Site.

5.2 Scope of Services

The following tasks were performed pursuant to the Scope of Work:

1) Pre-drilling activities included notifying DigSafe and local utilities to mark underground utilities in the area. Prior to soil excavation, two representative composite soil samples were collected from the impacted area using a stainless steel hand auger. The samples were submitted to a Massachusetts-certified laboratory for the analysis of characterization parameters in accord with the requirements of the receiving facility, Aggregate Recycling, Inc. of Eliot, Maine. Note that no PCBs were detected above the method detection limit of 15 ug/kg. A generator's waste profile was completed and verbally approved by the receiving facility on June 14, 2004. Laboratory reports and a generator's waste profile are included in **Appendix 6.**

2) On July 21-22, 2004, using a backhoe, impacted soils in the road shoulder area were excavated to a depth of 12 inches. Soils were temporarily stockpiled on-site and covered top and bottom with polyethylene sheeting. Within 24 hours the soils were loaded and transported under Bill of Lading to Aggregate Recycling, Inc. for recycling by asphalt batching.

3) Following excavation, eight confirmatory composite soil samples were collected from the excavation bottom and sidewalls. These samples were screened in the field for total petroleum hydrocarbons (TPHs) via EPA Method 9074 using a Dexsil Petroflag™ soil test kit. This method is suitable for determining the quantitative concentration of TPHs. The location of the confirmatory samples is depicted on **Figure 5**.

4) Immediately following confirmatory soil sampling the excavation was backfilled with clean processed gravel to preclude any threat to public safety and adverse impacts to storm runoff.

5) Eight confirmatory composite samples and one blind field duplicate were submitted to a Massachusetts-certified laboratory for analysis of EPHs using promulgated MADEP QA/QC methods.

6) Laboratory results were tabulated and compared to Method 1 standards and established background concentrations. An exposure point concentration was calculated for three detected PAH constituents. The data are summarized and discussed in **Section 5.3** (below).

5.3 Results for Soil Excavation at Road Shoulder Area

Following excavation, eight confirmatory composite soil samples were collected from the excavation bottoms and sidewalls. These samples were screened in the field for total petroleum hydrocarbons (TPHs) via EPA Method 9074 using a Dexsil Petroflag™ soil test kit. This method is suitable for determining the quantitative concentration of TPHs but has a high detection limit (approx. 10 mg/kg). The location of the confirmatory samples is depicted on **Figure 5**. Field screening results are summarized on **Table 25**.

Table 25
PetroFlag Field Test Data
American Auto Auction
123 Williams Street
North Dighton, Massachusetts

Sample ID	Date / Time	Reading (mg/kg)
Blank	7-21-04 / 1315	0
Calibration	7-21-04 / 1315	1000
PE-SS-3	7-21-04 / 1316	181
PE-SS-4	7-21-04 / 1318	5.0
Sidewall south	7-21-04 / 1338	0
PE-SS-5	7-22-04 / 915	0
Sidewall East	7-11-04 / 1030	0
Sidewall West	7-22-04 / 1040	0
PE-SS-6	7-22-04 / 1050	50
Sidewall North	7-22-04 / 1100	0

PE = Bottom sample at 12" depth
Response factor of 5 was used for all samples. All samples were 10.0 grams by weight

Based on the above screening data, potentially elevated TPH was observed at excavation bottom locations PE-SS-3 and PE-SS-6. Accordingly an additional three inches of soil was excavated from these areas prior to backfilling the excavation.

Eight confirmatory composite samples and one blind field duplicate were submitted to a Massachusetts-certified laboratory for analysis of EPHs using promulgated MADEP QA/QC methods. Laboratory results are summarized and compared to Method 1 standards, site-specific background concentrations, and MADEP background concentrations on **Table 26**.

Table 26
Analytical Summary: Post-Excavation Confirmatory Soil Samples from Road Shoulder
Compared to Background and Method 1 Standards with EPC Evaluation
93-123 Williams Street
North Dighton, Massachusetts

Sample / (Depth) / Date	Concentration									MADEP Method 1 Standard						90th Percentile Background**	MADEP Background Natural Soils***	Exposure Point Concentration****
Analyte	PE-SS-5, 12" 7/22/04	Sidewall East 7/22/04	Sidewall West 7/22/04	PE-SS-6, 12" 7/22/04	Sidewall North 7/22/04	PE-SS-3, 12" 7/21/04	PE-SS-4, 12" 7/21/04	South Sidewall 7/21/04	*PE-SS-17, 12" 7/21/04	S-1 / GW-2 Soil	S-1 / GW-3 Soil	S-2 / GW-2 Soil	S-2 / GW-3 Soil	S-3 / GW-2 Soil	S-3 / GW-3 Soil			
Extractable Petroleum Hydrocarbon (EPH) (ug/kg):																		
C9-C18 Aliphatics	<11000	<11000	<11000	<11000	<11000	<11000	<11000	<12000	<11000	1000000	1000000	2500000	2500000	5000000	5000000	6000	NE	
C19-C36 Aliphatics	<11000	<11000	<11000	<11000	<11000	<11000	<11000	<12000	<11000	2500000	2500000	5000000	5000000	5000000	5000000	73400	NE	
C11-C22 Aromatics	<11000	16000	18000	22000	14000	30000	21000	15000	<11000	800000	800000	2000000	2000000	5000000	5000000	97700	NE	
Acenaphthene	<110	<110	<110	<110	<110	<110	<110	<120	<110	1000000	1000000	2500000	2500000	5000000	4000000	157	500	
Acenaphthylene	<110	<110	120	230	230	<110	<110	<120	<110	100000	100000	2500000	1000000	2500000	1000000	189	500	
Anthracene	270	<110	<110	110	<110	160	<110	<120	<110	1000000	1000000	2500000	2500000	5000000	5000000	357	1000	
Benzo[a]anthracene	<110	280	<110	360	120	**830**[abc]	<110	150	<110	700	700	1000	1000	4000	4000	1770	2000	238
Benzo[a]pyrene	120	360	<110	430	150	**1000**[abcdefghi]	<110	180	<110	700	700	700	700	700	700	1760	2000	293
Benzo[b]fluoranthene	230	570	200	**770**[bc]	220	**1700**[abcdef]	160	340	170	700	700	1000	1000	4000	4000	3290	2000	524
Benzo[g,h,i]perylene	<110	370	<110	380	<110	630	<110	150	<110	1000000	1000000	2500000	2500000	2500000	2500000	983	1000	
Benzo[k]fluoranthene	<110	210	<110	290	<110	630	<110	<120	<110	7000	7000	10000	10000	40000	40000	1270	1000	
Chrysene	160	410	140	510	180	1300	130	180	110	7000	7000	10000	10000	40000	40000	2640	2000	
Dibenz[a,h]anthracene	<110	<110	<110	<110	<110	170	<110	<120	<110	700	700	700	700	800	800	60	500	
Fluoranthene	<110	780	190	860	230	2500	170	320	180	1000000	1000000	2000000	1000000	5000000	1000000	5350	4000	
Fluorene	120	<110	<110	<110	<110	<110	<110	<120	<110	1000000	1000000	2000000	2000000	5000000	4000000	167	1000	
Indeno[1,2,3-cd]pyrene	<110	220	<110	340	120	680	<110	140	<110	700	700	1000	1000	4000	4000	971	1000	
Phenanthrene	<110	290	<110	350	<110	1000	<110	<120	<110	1000000	100000	2500000	100000	2500000	100000	2440	3000	
Pyrene	260	720	210	820	280	2200	270	380	200	700000	700000	2000000	2000000	5000000	5000000	4870	4000	
2-Methylnaphthalene	<110	<110	<110	<110	<110	<110	<110	<120	<110	500000	500000	1000000	1000000	2000000	1000000	59.5	500	
Naphthalene	<110	<110	<110	<110	<110	<110	<110	<120	<110	100000	100000	1000000	1000000	1000000	1000000	59.5	500	
PCB's by 8082 (ug/kg):		NA	NA	NA	NA	NA	NA	NA	NA									
Aroclor 1016	<15									---	---	---	---	---	---	---	---	---
Aroclor 1221	<15									---	---	---	---	---	---	---	---	---
Aroclor 1232	<15									---	---	---	---	---	---	---	---	---
Aroclor 1242	<15									---	---	---	---	---	---	---	---	---
Aroclor 1248	<15									---	---	---	---	---	---	---	---	---
Aroclor 1254	<15									---	---	---	---	---	---	---	---	---
Aroclor 1260	<15									---	---	---	---	---	---	---	---	---
Total PCB	<15									2000	2000	2000	2000	2000	2000	NE	NE	NA

Where necessary, the MADEP standards have been converted from ppm to ppb, or vice-versa, to match the laboratory reporting method.

NA: Analysis not performed
<x: Indicates analyte concentration not detected at or above specified laboratory quantitation limit (x)
Sample Results:
b-c: Analyte concentration in this sample exceeds the MADEP standard for:
b: S1/GW2 type soil
c: S1/GW3 type soil
: Although the analyte was not detected, the laboratory quantitation limit for this sample exceeds the MADEP standard for
*PE-SS-17 is a blind duplicate of PE-SS-4
** From twelve samples in site vicinity. See **Table 23** for the data.
***Per MADEP Technical Update 05232002
****Arithmetic average of eight post-excavation samples. PE-SS-17 was not used because it was a duplicate.
Bolded values exceed the Method 1 Standard.

With consideration to the data in **Table 26**, the concentration of benzo(b)fluoranthene exceeds the Method 1, S-1 standard in bottom sample PE-SS-6 (from the north side of the excavation) and the concentration of benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene exceed the Method 1, S-1 standard in bottom sample PE-SS-3 (from the south side of the excavation). However, the concentrations of these compounds are lower than the site-specific background concentrations (as determined under this investigation, see **Table 23**) and the MADEP-published background concentrations for natural soils. The calculated exposure point concentrations for these three compounds, based on the arithmetic averaging of concentrations in the eight confirmatory samples, are lower than the applicable Method 1, S-1 standards. No one data point concentration is 10 times the Method 1 standard and no Upper Concentration Limits (UCLs) are exceeded. Thus, based on these findings, soils at the Site have been reduced to concentrations which achieve background conditions, and to concentrations which achieve a condition of No Significant Risk under all foreseeable site uses.

5.4 Groundwater Monitoring

Groundwater monitoring and sampling of all usable monitor wells was previously performed on September 8, 2003, November 25, 2003, March 25, 2004, and June 23, 2004. Laboratory results were discussed in **Section 4.1.4** and summarized in previous **Tables 13, 14, 15 and 16.** A final round of monitoring and sampling was conducted on September 1, 2004. These results are presented in **Sections 5.5** and **5.6** as follows.

5.5 Groundwater Flow

An overburden groundwater contour map based on the September 1, 2004 gauging round is included as **Figure 6**. The map depicts an overall easterly groundwater flow direction towards the on-site stream with an indication of water table mounding over the area of the former Expo Building. This groundwater flow determination is consistent with previous determinations from previous gauging events.

5.6 Groundwater and Surface Water Sampling

A final round of groundwater gauging and sampling was conducted on September 1, 2004. Samples were collected from all usable monitor wells using dedicated, disposable bailers. MW-4 and MW-EX2 were dry and hence could not be sampled. MW-1 went dry during sampling, hence only one one-liter container could be filled. All groundwater samples were collected in accordance with WSC-VIIA CAM guidance. Prior to sample collection, groundwater depths were gauged and each well was purged of at least three well volumes of water. Groundwater samples were collected and stored in analyte-

specific glass containers. A blind field duplicate was collected from MW-7 and labeled as MW-17. Samples were submitted to a Massachusetts-certified laboratory for analysis for PCBs via EPA Method 8082 and EPH with target analytes using promulgated MADEP QA/QC methods. Gauging data are summarized on **Table 27** and laboratory analytical reports including Chain-of-Custody documentation are included as **Appendix 8**. Laboratory results, summarized in **Table 28**, revealed no detected concentrations of PCBs or EPHs in any of the samples.

On September 1, 2004, surface water samples were collected from the Tremont Street culvert. Samples were collected using a teflon pond ladle. The samples were analyzed for EPH using MADEP Methods and for PCBs using EPA Method 8082. Laboratory results indicated no detected PCBs (<0.01 ug/L) or EPHs (<100 ug/L). The laboratory reports including Chain-of-Custody documentation are included as **Appendix 7.**

Table 27
Gauging Summary: September 1, 2004
93-123 Williams Street
North Dighton, Massachusetts

Job #:	R035B				Weather:	Fair					Gauged By:	FM	
Date:	9/1/2004				Temperature:	72					Checked By:	SRL	
Well Number	Well Diameter	Depth To Product (ft)	Depth To Water (ft)	Product Thickness (in)	Prodoct Bailed (in)	Depth To Bottom (ft)	LWC (ft)	Amount to remove (gal)	Amount removed (gal)	Well go dry?	Odors	Color	Comments
MW-1	3/4"	NP	10.51	0	0	12.51	2.00	0.4	0.4	Yes	No	Brown	Could only fill 1 container
MW-2	3/4"	NP	3.09	0	0	9.32	6.23	1.20	1.20	No	No	Brown	
MW-3	3/4"	NP	2.00	0	0	7.90	5.90	1.00	1.00	No	No	Brown	
MW-4	1"	NP	Dry	0	0	15.80	—	—	—	—	—	—	Dry
MW-5	1"	NP	18.10	0	0	23.86	5.76	1.10	1.10	No	No	Brown	
MW-6-2	2"	NP	15.06	0	0	19.70	4.64	2.30	2.50	Yes	No	Brown	
MW-7	2"	NP	13.36	0	0	19.69	6.03	2.90	3.00	No	No	Brown	
MW-8	2"	NP	12.78	0	0	19.50	6.72	3.30	3.50	No	No	Brown	
MW-9	2"	NP	10.85	0	0	17.50	6.65	3.20	3.50	Yes	No	Brown	
MW-10	2"	NP	6.94	0	0	11.64	4.70	2.30	2.50	No	No	Brown	
MW-11	2"	NP	10.76	0	0	17.15	6.39	3.10	3.20	No	No	Brown	
MW-EX	2"	NP	6.38	0	0	8.50	2.12	1.00	1.00	No	No	Brown	
MW-EX2	2"	NP	Dry	0	0	13.02	—	—	—	—	—	—	Dry

Notes:

LWC = Length of Water Column

Amount to remove = 3 x 0.0408 x (diameter of well)2 x LWC

NP = No product

Sample MW-17 is blind duplicate of MW-7

SAGE ENVIRONMENTAL

Table 28
Analytical Summary: Groundwater Samples Collected September 1, 2004
93-123 Williams Street
North Dighton, Massachusetts

Sample / Date	Concentration											MADEP Method 1 Standard		MADEP Method 3 Groundwater UCL
Analyte	MW-EX 9/1/2004	MW-6-2 9/1/2004	MW-5 9/1/2004	MW-7 9/1/2004	MW-8 9/1/2004	MW-9 9/1/2004	MW-10 9/1/2004	MW-11 9/1/2004	MW-17 9/1/2004	MW-2 9/1/2004	MW-3 9/1/2004	GW-2 Groundwater	GW-3 Groundwater	
Extractable Petroleum Hydrocarbon (EPH) (ug/L):														
C9-C18 Aliphatics	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	1000	20000	100000
C19-C36 Aliphatics	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	NE	20000	100000
C11-C22 Aromatics	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	50000	30000	100000
Acenaphthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	5000	50000
Acenaphthylene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Anthracene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Benzo[a]anthracene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Benzo[a]pyrene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NE	3000	30000
Benzo[b]fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Benzo[g,h,i]perylene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NE	3000	30000
Benzo[k]fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Chrysene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Dibenz[a,h]anthracene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NE	3000	30000
Fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	200	3000
Fluorene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
Indeno[1,2,3-cd]pyrene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NE	3000	30000
Phenanthrene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	50	3000
Pyrene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NE	3000	30000
2-Methylnaphthalene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	10000	3000	100000
Naphthalene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	6000	6000	60000
PCB's by 8082 (ug/L):														
Aroclor 1016	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	—	—	—
Aroclor 1221	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	—	—	—
Aroclor 1232	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	—	—	—
Aroclor 1242	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	—	—	—
Aroclor 1248	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	—	—	—
Aroclor 1254	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	—	—	—
Aroclor 1260	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	—	—	—
Total PCB	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NE	0.3	5

Where necessary, the MADEP standards have been converted from ppm to ppb, or vice-versa, to match the laboratory reporting method.

NE: No standard is established for the substance

<x: Indicates analyte concentration not detected at or above specified laboratory quantitation limit (x)

: Analyte concentration in this sample exceeds the MADEP standard for

: Although the analyte was not detected, the laboratory quantitation limit for this sample exceeds the MADEP standard for

6.0 EXTENT OF CONTAMINATION

As indicated above, previous Immediate Response actions have been completed at the Site yielding data necessary to determine the nature and extent of contamination. A summary of pertinent data gained during previous response actions has been compiled and are appended as follows **Appendix 3 - Historical Soil, Sediment and Surface Water Analytical Data; Appendix 4 - Test Boring and Monitor Well Logs; and Appendix 5 - Historical Groundwater Analytical Data.** These data, in conjunction with data obtained from recent investigations, were utilized to characterize the extent of contamination on the Site.

6.1 Sediments

Based on initial laboratory data, sediments impacted by transformer oils originally extended from the east parking lot edge through an area of wooded drainage swales and extended down the intermittent stream channel for approximately 3,650 feet. The sediments in the catch basin sumps in the east parking lot were evidently were not impacted by PCBs, likely because the sumps were filled with sediment up to invert levels at the time of the release. Since the completion of IRA activities, detected levels of PCBs in sediments were noted to remain in two upstream areas of the intermittent stream channel at sample locations 1100'-1150' and 1250'-1300' (see post-excavation data on **Table 4** and **Table 5**). EPHs appear to have been removed to background levels. Sediments at a storm drain outfall west of the release area do not appear to have been adversely impacted by the release of PCBs.

6.2 Soil

A westerly component of runoff flow from the fire appears to have impacted soils approximately 260 feet laterally to approximately 12 inches depth within a grass-covered road shoulder bordering the east side of Williams Street. The primary contaminant of concern in this area of the Site was EPHs. Since the completion of soil excavation activities in July 2004, concentrations of EPH constituents have been reduced to concentrations which are below background with exposure point concentrations that are also lower than Method 1, S-1 standards.

6.3 Surface Water

PCBs in excess of the IRA water objective (0.5 ug/L) were noted in water samples collected from the stream channel in downstream areas; within runoff water which

accumulated in the Expo garage basement; within runoff water which entered an electric manhole on the north side of the Expo building; and, in pavement runoff collected at the northwest side of the Expo building. Subsequent subsurface testing revealed that PCB runoff did not significantly impact soils or groundwater in the vicinity of the electric manhole, the garage basement and the soil at the west side of the Site.

PCBs were initially detected at concentrations up to 4.8 ug/l in stream samples collected at the Tremont Street culvert on September 19, 2001 but this concentration decreased to below analytical detection limits as observed in later samples collected on September 26, 2001 and in fourteen subsequent sampling events conducted both during and after sediment excavation activities. Based on these findings, there appear to be no significant long-term impacts to stream waters by PCBs.

Seventeen PAHs were initially detected in a runoff sample from the garage basement. Subsequent groundwater testing in the vicinity of the former garage basement indicated no significant impacts by EPHs to groundwater in this area of the site. Analysis for EPHs for samples collected from the stream at the Tremont Street culvert was conducted on March 15, 2002, September 8, 2003, November 25, 2004, March 25, 2004, and June 23, 2004, and September 1, 2004. Laboratory results indicated no detected EPH constituents in any of these samples. Based on these finding, there appear to have been no long term impacts by EPHs to surface waters.

6.4 Groundwater

Based on data obtained from five comprehensive rounds of groundwater sampling, on-site groundwater does not appear to have been impacted by the release of PCBs. Laboratory results revealed sporadic low levels of C11-C22 aromatics and/or C19-C36 aliphatics in MW-1, MW-2, MW-3, MW-6-2, MW-7, MW-8, MW-9, MW-10, MW-11, MW-EX, and MW-EX-2. Only monitor well MW-5 has had no detected EPHs. In all monitor wells the observed constituent concentrations are significantly less than 1/2 the applicable Method 1, GW-2/GW-3 standards. Free product (NAPL) has not been observed at any monitoring location at any time. Based on these findings, groundwater on the Site has not been significantly impacted by the release of EPHs. The detected EPH constituents are suspected to be background occurrences attributable to historic impacts by non-regulated parking lot runoff rather than the subject release (fire water runoff).

7.0 METHOD 1 / METHOD 3 RISK CHARACTERIZATIONS

7.1 Method 1 - Soil and Groundwater

Pursuant to 310 CMR 40.0971, MCP Method 1 was chosen to characterize the risk of harm posed by the Site to health, public welfare and the environment for soil and groundwater media. Method 1 may be used when the presence of oil and/hazardous material is limited to soil and/or groundwater. A Stage I environmental screening pursuant to 310 CMR 40.0995 (**Section 4.3** of this report) indicated no visible evidence of long term environmental harm due to soil or groundwater conditions.

Post-excavation soil analytical data indicate detected concentrations of three EPH constituents. The data, presented in **Table 26,** indicated that the concentration of benzo(b)fluoranthene exceeds the Method 1, S-1 standard in bottom sample PE-SS-6 (from the north side of the excavation) and the concentration of benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene exceed the Method 1, S-1 standard in bottom sample PE-SS-3 (from the south side of the excavation). However, the concentrations of these compounds are lower than the site-specific background concentrations (as determined under this investigation, see **Table 23**) and the MADEP-published background concentrations for natural soils. The calculated exposure point concentrations performed in accord with 310 CMR 40.0926 for these three compounds are lower than the applicable Method 1, S-1 standards. No one data point concentration is 10 times the Method 1 standard and no Upper Concentration Limits (UCLs) are exceeded. Thus, based on these findings, soils at the Site have been remediated to concentrations which achieve background conditions, and to concentrations which achieve a condition of No Significant Risk under all forseeable site uses. A Notice of Activity and Use Limitation (AUL) pursuant to the requirements of 310 CMR 40.1074 is not required to maintain a condition of no significant risk for soils on the Site.

Groundwater analytical data indicate on-site groundwater does not appear to have been impacted by the release of PCBs. Laboratory results summarized in **Tables 13, 14, 15, 16 and 28** revealed sporadic low levels of C11-C22 aromatics and/or C19-C36 aliphatics in MW-1, MW-2, MW-3 , MW-6-2, MW-7, MW-8, MW-9, MW-10, MW-11, MW-EX, and MW-EX-2. In all monitor wells the observed EPH constituent concentrations are significantly less than 1/2 the applicable Method 1, GW-2/GW-3 standards. Free product (NAPL) has not been observed. Based on these findings, groundwater on the Site has not been significantly impacted by the release of EPHs. The detected EPH constituents are believed to be background occurrences attributable to historic impacts by non-regulated parking lot runoff incidental to the operation of motor vehicles, rather than the subject

release (fire water runoff). Based on this data, *SAGE* concludes that groundwater on the Site poses no significant risk of harm to health, public welfare and the environment.

7.2 Method 3 - Sediment and Surface Water

Pursuant to 310 CMR 40.0992, MCP Method 3 was used to characterize the risk of harm posed by the Site to health, public welfare and the environment for sediment and surface water media. Method 3 relies upon detailed information about the Site, the oil and/or hazardous material, and potential exposures to human and environmental receptors under all current or reasonably foreseeable site activities and uses to characterize the risk of harm. A Stage I environmental screening pursuant to 310 CMR 40.0995 (**Section 4.3** of this report) indicated no visible evidence of long term environmental harm due to sediment or surface water conditions.

Since the completion of IRA activities, detected concentrations of PCBs in sediments have been noted to remain in only two upstream areas of the intermittent stream channel at sample locations 1100'-1150' and 1250'-1300'. Post excavation data for current site conditions are summarized on **Table 29**. As indicated on **Table 29,** all PCB concentrations are below the freshwater screening benchmark Threshold Effect Concentration (TEC) of 59.8 ug/kg. The TEC is the contaminant concentration below which harmful effects of on sediment-dwelling organisms are not expected. In addition all remaining PCB concentrations are significantly lower than the Method 1, S-1 standard for soil. Based on this data, *SAGE* concludes that the remaining PCBs in sediments pose no significant risk of harm to health, public welfare and the environment.

Since the completion of IRA activities, EPHs in sediment appear to have been reduced to concentrations which are below the 90th Percentile of Background. The final post excavation analytical data for EPHs compared to the site-specific 90th Percentile of Background concentrations are summarized on previous **Table 5** and **Table 20**. Pursuant to MADEP Policy #WSC-04-160 *"the site-specific background is the cleanup standard for that compound"*. As such, additional remedial efforts to achieve concentration reductions in sediment below a level of no significant risk are not required.

Since the completion of IRA activities, PCBs and EPHs have not been analytically detectable in surface waters. The analytical detection limits for the majority of surface water samples have being generally at or below the established MADEP Fresh Water Chronic Criteria (see **Table 10**). Thus, it is the opinion of *SAGE* that the concentations of contaminants in surface waters pose no significant risk of harm to health, public welfare and the environment.

Table 29
Post-Excavation Sediment Analytical Results - PCBs
Compared to TECs and Method 1, with EPC Evaluation
Samples Collected March 28, 2003 and April 19, 2004

Sample / (Depth) / Date	Concentration								MADEP TEC (µg/kg)	Method 1 S-1 (µg/kg)	Exposure Point Concentration (µg/kg)*
Analyte	1100-1150 3/28/2003	1250-1300 3/28/2003	PE-MSW 4/19/2004	2100-2150 3/28/2003	3000-3050 3/28/2003	3000-3050 FD 3/28/2003	3200-3250 3/28/2003	3600-3650 (SP-1) 3/28/2003			
PCB's by 8082 (ug/kg):											
Aroclor 1254	48	52	<16	<16	<18	<18	<38	<33	NE	NE	21.1
Total PCB	48	52	<16	<16	<18	<18	<38	<33	59.8	2000	21.1

Where necessary, the MADEP standards have been converted from ppm to ppb, or vice-versa, to match the laboratory reporting method.

<x: Indicates analyte concentration not detected at or above specified laboratory quantitation limit (x)

TEC = Threshold Effect Concentration per MADEP-SEDSCRN Technical Update, May 2002
NE = No standard has been established for this substance

FD = Field Duplicate

*Arithmetic Average of seven post-excavation confirmatory samples. Sample 3000' - 3050' FD was not used because it was a field duplicate.

SAGE ENVIRONMENTAL

8.0 FEASIBILITY OF ACHIEVING OR APPROACHING BACKGROUND

8.1 PCBs

Based on post-remediation confirmatory analytical results, PCBs in soil and surface water appear to have been reduced to background concentrations. These data are presented and discussed in **Section 4.1.2** and **Section 5.3** (Soil) and **Section 4.1.3** (Surface Water). Based on available data, groundwater at the Site appears to have never been impacted by PCBs.

With regards to sediment, post-remediation confirmatory analytical results indicate that detectable concentrations of PCBs may currently remain in stream sediments but at concentrations which would be below the level of No Significant Risk (i.e. the TEC, 59.8 ug/kg). For the purpose of this investigation, any detected concentration of PCBs in sediment is considered to be a "non-background" condition, although it may be possible that airborne dust, etc., may have resulted in some background PCB occurrences. As such, background conditions for PCBs in sediment do not appear to have been *achieved* at this Site.

MADEP Policy WSC-04-160 does not provide guidance for establishing background conditions in "sediment". However, using the criteria established for "soil", it appears that the post-remediation concentration of PCBs in on-site sediment would *approach* (but not *achieve*) background because: 1) The concentration of PCBs at all post-remediation sampling locations is below the Method 1, S-1, standard, and, 2) The exposure point concentration for PCBs, 21.1 ug/kg, is less than 50% of the level of No Significant Risk (i.e. less than 1/2 the TEC, 29.9 ug/kg). The data are summarized on **Table 27**.

Pursuant to Policy WSC-04-160, determinations on feasibility should consider risks resulting from the remedial action with consideration to such factors as potential damage to the environment. It is the opinion of *SAGE* that additional remediation of PCB-impacted sediment via excavation or whatever means would result in unnecessary environmental damage to the site's wetland and woodland biota - biota which have already suffered through one major and two minor episodes of stream excavation, and, which just recently appear to have recovered from the physical damages and disturbances which resulted from these IRA's. Pecuniary costs aside, the benefits of *achieving* background conditions at this Site do not appear to justify the risk to the environment.

8.2 EPHs

Based on an analysis of site-specific background data and post-remediation confirmatory analytical results, the level of EPHs in sediment, soil, and surface water appear to have been reduced to background concentrations. These data are presented and discussed in **Section 4.2.1** (Sediment), **Section 5.3** (Soil), and **Section 4.2.2** (Surface Water).

With regards to groundwater, laboratory results summarized in previous **Tables 13, 14, 15 and 16** revealed sporadic low levels of C11-C22 aromatics and/or C19-C36 aliphatics in groundwater samples from MW-1, MW-2, MW-3, MW-6-2, MW-7, MW-8, MW-9, MW-10, MW-11, MW-EX, and MW-EX-2. A detailed evaluation of background conditions for EPHs in groundwater in the site vicinity was not performed. *SAGE* believes that the low concentrations of EPH constituents detected in on-site groundwater are background occurrences attributable to historic impacts by the infiltration of non-regulated parking lot and roadway runoff rather than the subject release (fire water runoff).

In all groundwater samples the observed EPH constituent concentrations are significantly less than 1/2 the applicable Method 1, GW-2/GW-3 standards. Therefore, in accord with MADEP Policy WSC-04-160, background conditions for EPHs have been *approached* but not *achieved*. Because a large area (≥10 acres) and volume (≥ 19 million gallons) of aquifer has been impacted by EPHs, the additional costs to remediate groundwater to background conditions would clearly be greater than 20% of the cost to achieve a condition of No Significant Risk. As such, the cost of implementation of groundwater remediation to *achieve* background would not be justified by the benefits.

9.0 REMEDIATION WASTE

As of September 15, 2003 approximately 130 tons of remediation waste generated under IRA activities was transported and disposed. These wastes included non-Department of Transportation (DOT) regulated transformer oils, PCB transformer oils, PCB solid wastes and mixtures, PCB transformers, non-PCB transformers and switchgear, non-PCB oily debris, non-PCB soil cuttings from drilling operations, non-PCB catch basin sludge, and approximately 100 tons of PCB-contaminated sediment and debris. This material was disposed at the CWM Hazardous Waste Landfill in Model City, New York, Transcycle Industries in Pell City, Alabama, and Northland Environmental, Inc. in Providence, Rhode Island. Manifests and Certificates of Disposal are provided in the Phase I Report dated September 2002, IRA Status Report #3 dated January 2003, and IRA Status Report #5 dated January 2004.

IRA wastes generated recently from sediment excavation in the swale areas on April 19, 2004 included two drums of PCB sediment and debris which was transported on August 19, 2004 and disposed at the CWM Hazardous Waste Landfill in Model City, New York. Manifests and Certificates of Disposal for are provided in **Appendix 9**. Approximately 138 tons of soil from soil excavation along the road shoulder area on July 21-22, 2004 was transported under Bill of Lading (BOL) to Aggregate Recycling, Inc. in Eliot, Maine for asphalt batching. A copy of the BOL and associated waste characterization data is included in **Appendix 9**.

10.0 CONCLUSIONS

Based upon the information and data detailed in this report and in the included Method 1 and Method 3 risk characterizations, site contaminants identified in soil, sediment, groundwater and surface water appear to have been reduced by Immediate Response Actions to levels which do not pose a Significant Risk of Harm to Public Health or the Environment and to levels which either approach or achieve background conditions. Further remedial actions tentatively appear to be unnecessary as a level of No Significant Risk and a Permanent Solution appear to have been achieved. However, additional data collection appears to be warranted within the eastern portion of the site where post-remedial confirmatory data for sediment and soil is insufficient to conclude with sufficient confidence that no post-remedial PCB contamination exceeding the TEC remains in this area.

Pending client approval, additional confirmatory sediment and soil sampling for PCB analysis will be conducted at randomly selected locations in the eastern portion of the Site during the fall of 2004. Based on analytical results, either a Response Action Outcome / IRA Completion Statement or a Phase III - Identification, Evaluation and Selection of Comprehensive Remedial Alternatives analysis will be performed, as appropriate.

11.0 LIMITATIONS

Data obtained from public agencies, site inspections, data mapping sources, and analytical laboratories, as well as information summarized in reports by prior investigators, may

have been used in the characterization of this Site. The accuracy of the conclusions derived from these data is based solely on the accuracy of the data reported and/or supplied. Should data be made available concerning the Site which is not included in this

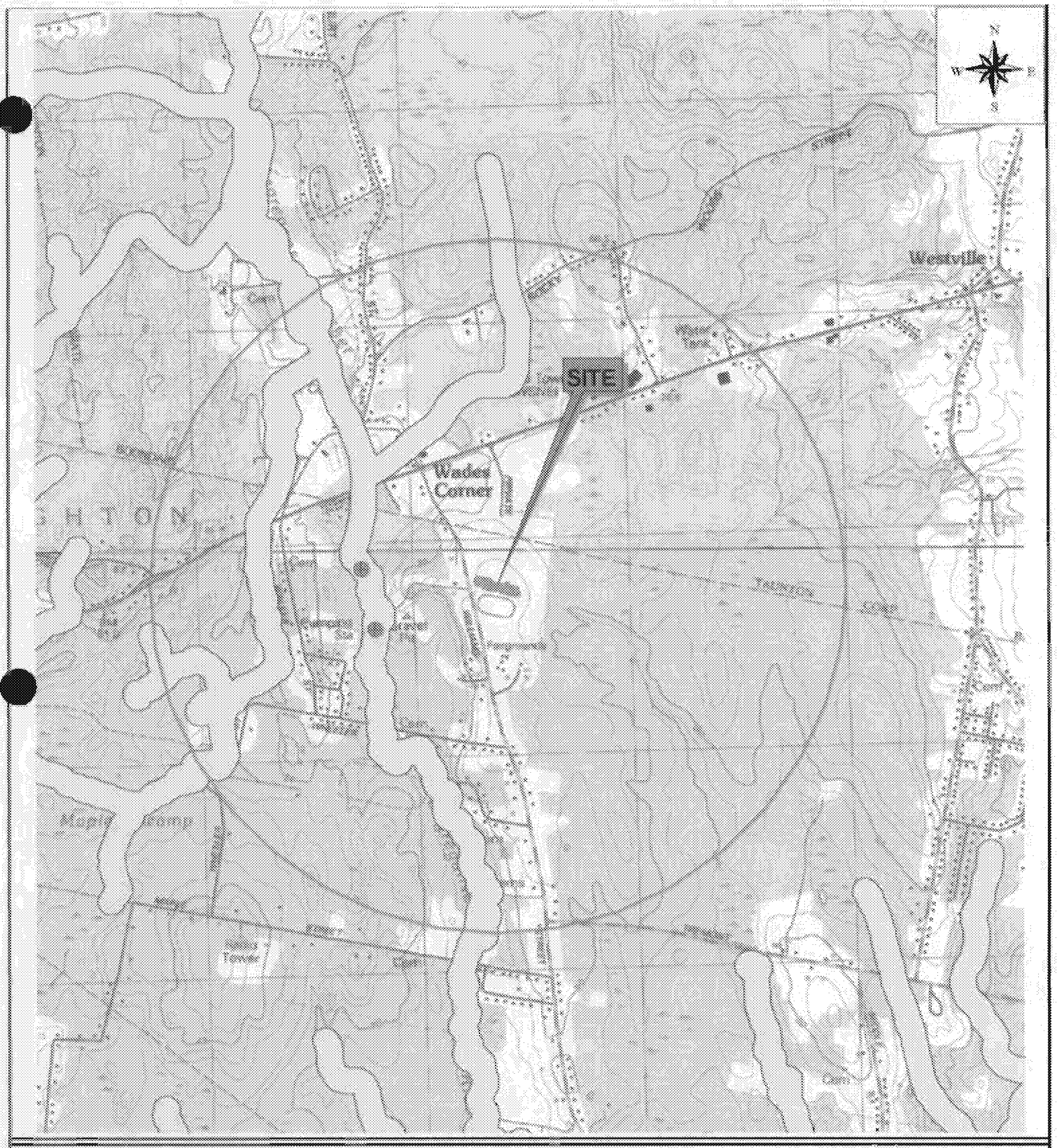
report, it should be reported to *SAGE* Environmental, Inc. (*SAGE*) so that findings, conclusions, and/or recommendations can be altered and modified (if necessary).

Events occurring on the Site after on-Site inspections are beyond the scope of this report. As such, *SAGE* makes no expressed or implied representations, warranties or guarantees regarding any changes in the condition of the premises after the date of the on-Site inspection(s).

Any qualitative or quantitative information regarding the Site which was not available to *SAGE* at the time of this assessment may result in modification(s) to the conclusions and/or representations made in this report.

Due to the fact that geological and soil formations are inherently random, variable, and indeterminate (heterogeneous) in nature, the professional services and opinions provided by *SAGE* under our agreement are not guaranteed to be a representation of complete Site conditions, which are variable and subject to change with time or the result of natural or man-made processes. Although our services are extensive, opinions, findings, and conclusions presented are limited to and by the data supplied, reported, and/or obtained. Unless specified herein, this investigation did not include evaluation of: asbestos-containing materials, radon, lead-based paint, lead in drinking water, wetlands, regulatory compliance, industrial hygiene, health and safety or other OSHA compliance, cultural and historic resources, ecological resources, endangered species, indoor air quality, electromagnetic fields, formaldehyde, high-voltage power lines, non-point sources or best management practices for silviculture. Under the terms of the agreement no attempt was made to determine the compliance or regulatory status of present or former owners or operators of the site with respect to federal, state, municipal, environmental, and land use laws or regulations.

SAGE has retained a copy of this report. No deletions or additions are permitted without the written consent of *SAGE*. The report, including data, maps, and figures contained herein, are not suitable for use in its present form, for any ongoing or pending litigation. Use of this report, in whole or in part, by parties other than those authorized by *SAGE* is prohibited.



SAGE Environmental, LLC

FIGURE 1

DEP Public Water Supply Wells
Zone A
1 Mile Radius

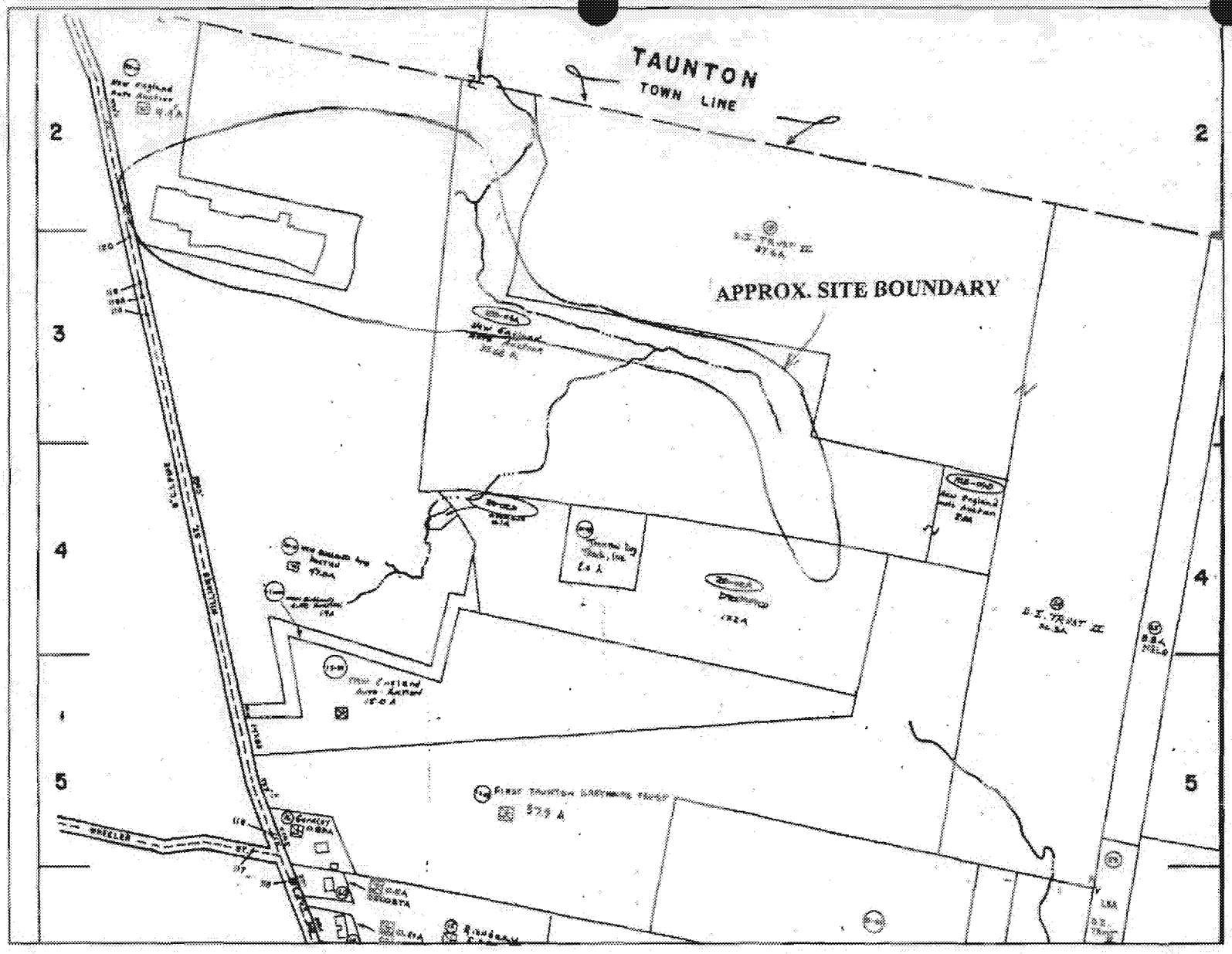
Site Location

USGS QUADRANGLE
SOMERSET/NORTON, MA

USGS Quadrangle Site Location Plan
American Auto Auction
123 Williams Street
North Dighton, Massachusetts

DATE:	01/02/02	SAGE JOB #:	R03S
CREATED BY:	CMM		

0 0.2 0.4 0.6 0.8 1 1.2 Miles



SAGE Environmental, LLC	SAGE Job #: R035B	Customer Job #:	**FIGURE 2**
	SAGE Drawing #: PLAT MAP		

Original Drawing Date:	05/21/02	MWD
Revision Dates/Initials:		

N
W E
S

PLAT MAP
AMERICAN AUTO AUCTION
92-123 WILLIAMS STREET
NORTH DIGHTON, MASSACHUSETTS

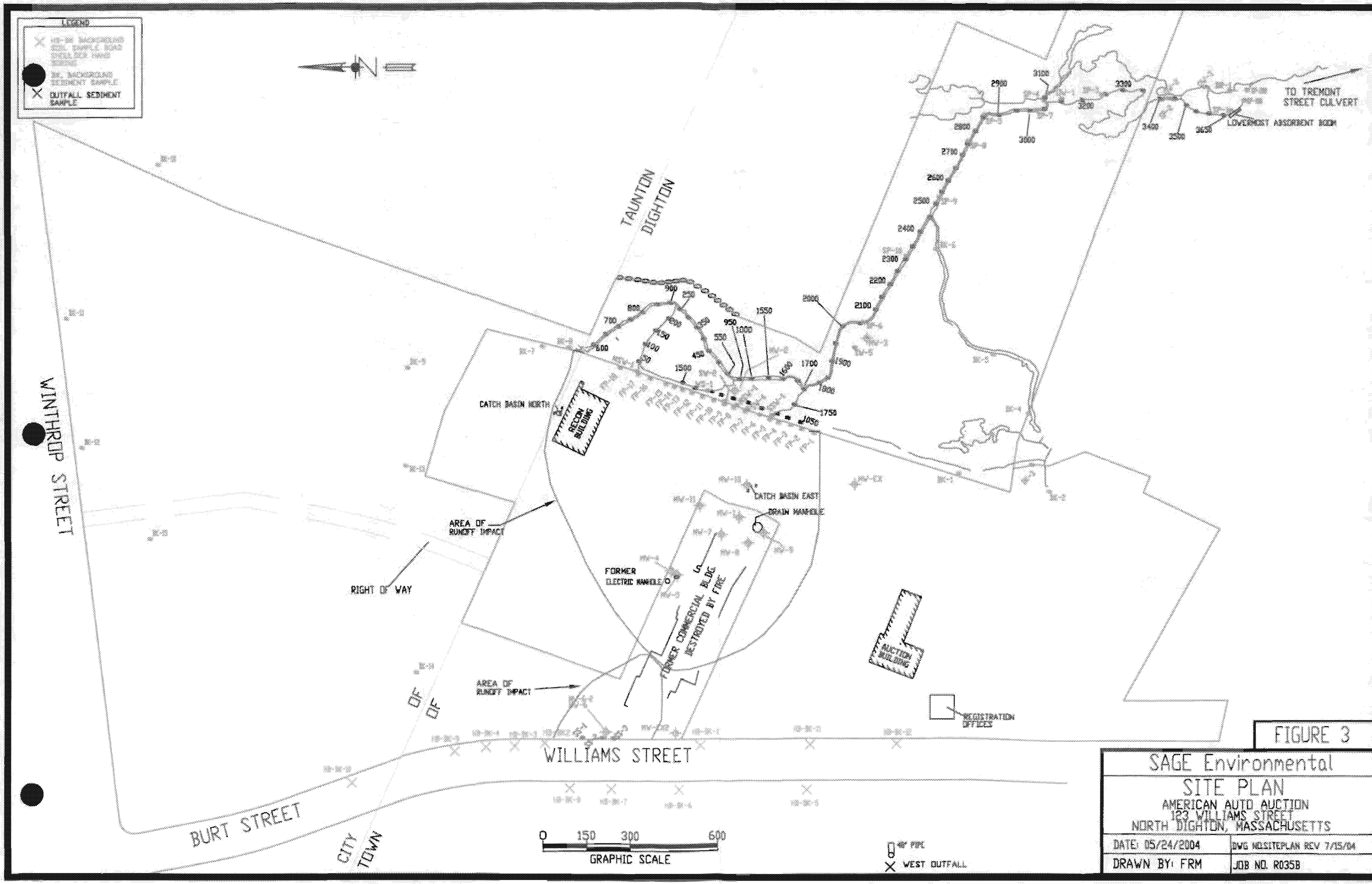


FIGURE 3

SAGE Environmental

SITE PLAN

AMERICAN AUTO AUCTION
123 WILLIAMS STREET
NORTH DIGHTON, MASSACHUSETTS

DATE: 05/24/2004	DWG NO.SITEPLAN REV 7/15/04
DRAWN BY: FRM	JOB NO. R035B

N

LEGEND

- HAND BORING
- PREVIOUS SOIL SAMPLING LOCATION
- SOIL BORING
- TEST BORING COMPLETED AS A MONITOR WELL
- CATCH BASIN
- UTILITY POLE

CHAIN LINK FENCE

AREA OF PROPOSED SOIL REMOVAL

HB-SS-2 HB-SS-1 HB-SS-3 HB-SC-4 HB-SC-1 HB-SC-2 HB-SC-3

MW-B-1 MW-B-2 MW-EX-2

B-3 B-2 B-1

PP#10L PP#11L PP#12 PP#13 PP#14L PP#15L PP#16L

HB-BK-1 HB-BK-2 HB-BK-3 HB-BK-4 HB-BK-5 HB-BK-6 HB-BK-7 HB-BK-8 HB-BK-11 HB-BK-12

1.5' x 1.5' CONCRETE POST

METAL GUARD RAIL

EXCAVATED AREA

WILLIAMS STREET

PAVED SHOULDER

PLAN COMPILED FROM DATA COLLECTED BY SAGE IN CONJUNCTION WITH
A SITE PLAN PREPARED FOR SAGE BY BAY COLONY GROUP, INC., DATED JULY 21, 2003
SOME FEATURES APPROXIMATE

0 30 60 120
GRAPHIC SCALE

FIGURE 4

SAGE Environmental, Inc.

ROAD SHOULDER AREA
AMERICAN AUTO AUCTION
123 WILLIAMS STREET
DIGHTON, MASSACHUSETTS

DATE: 03/18/04	DWG: ROADSHOULDER
DRAWN BY: FM	JOB NO. R035B

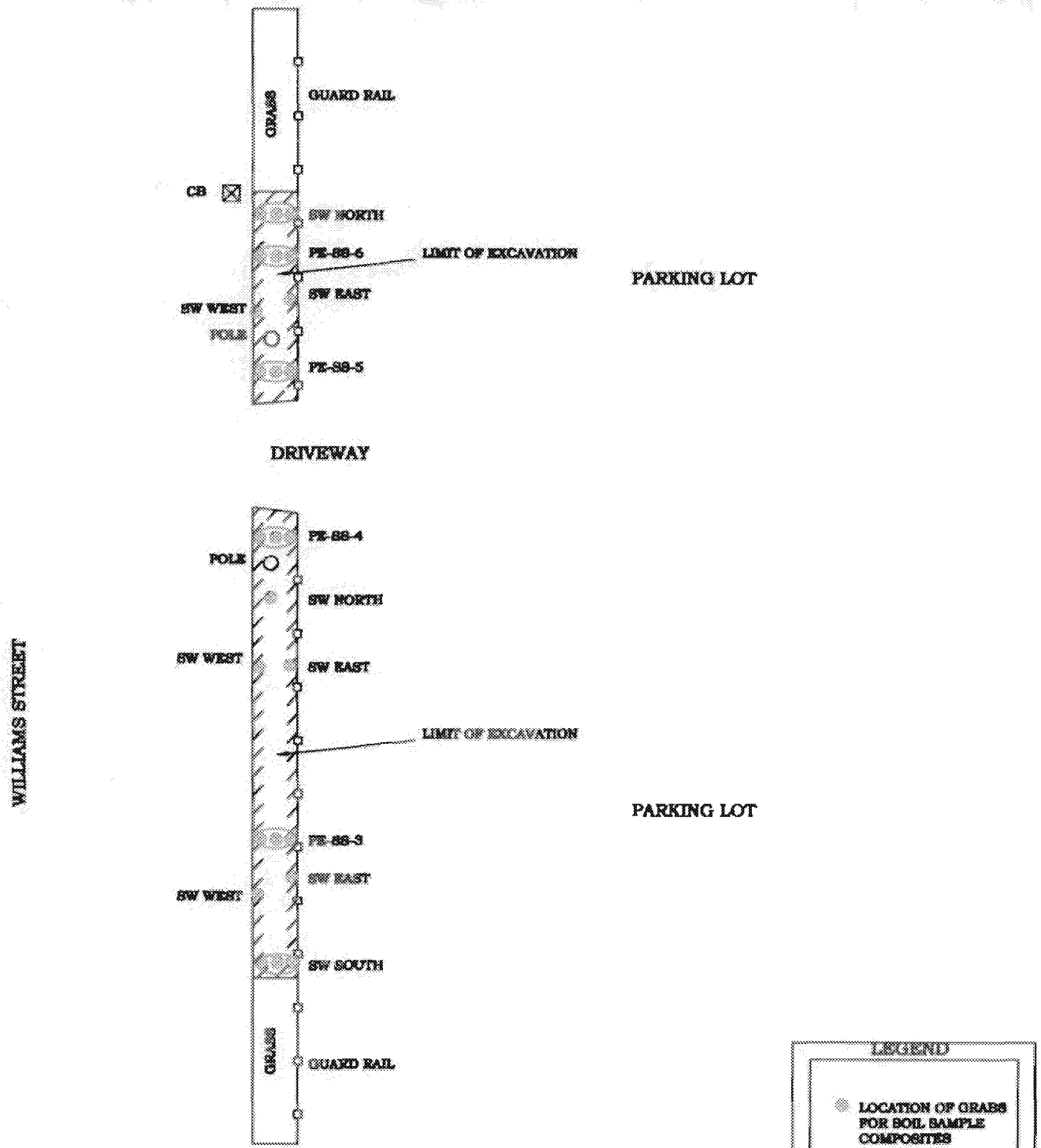


FIGURE 5

SAGE Environmental, Inc.	SAGE Job #:	BB95B	Customer Job #: Cust Job #
	SAGE Drawing #:	EXCAVATIONSAMPLE	

Original Drawing Date:	07/28/04	FRM
Revision Dates/Initials:		

POST-EXCAVATION SAMPLE PLAN ROAD-SHOULDER AREA
AMERICAN AUTO AUCTION
123 WILLIAMS STREET
DIGHTON, MA

SCALE: 1" = 50'

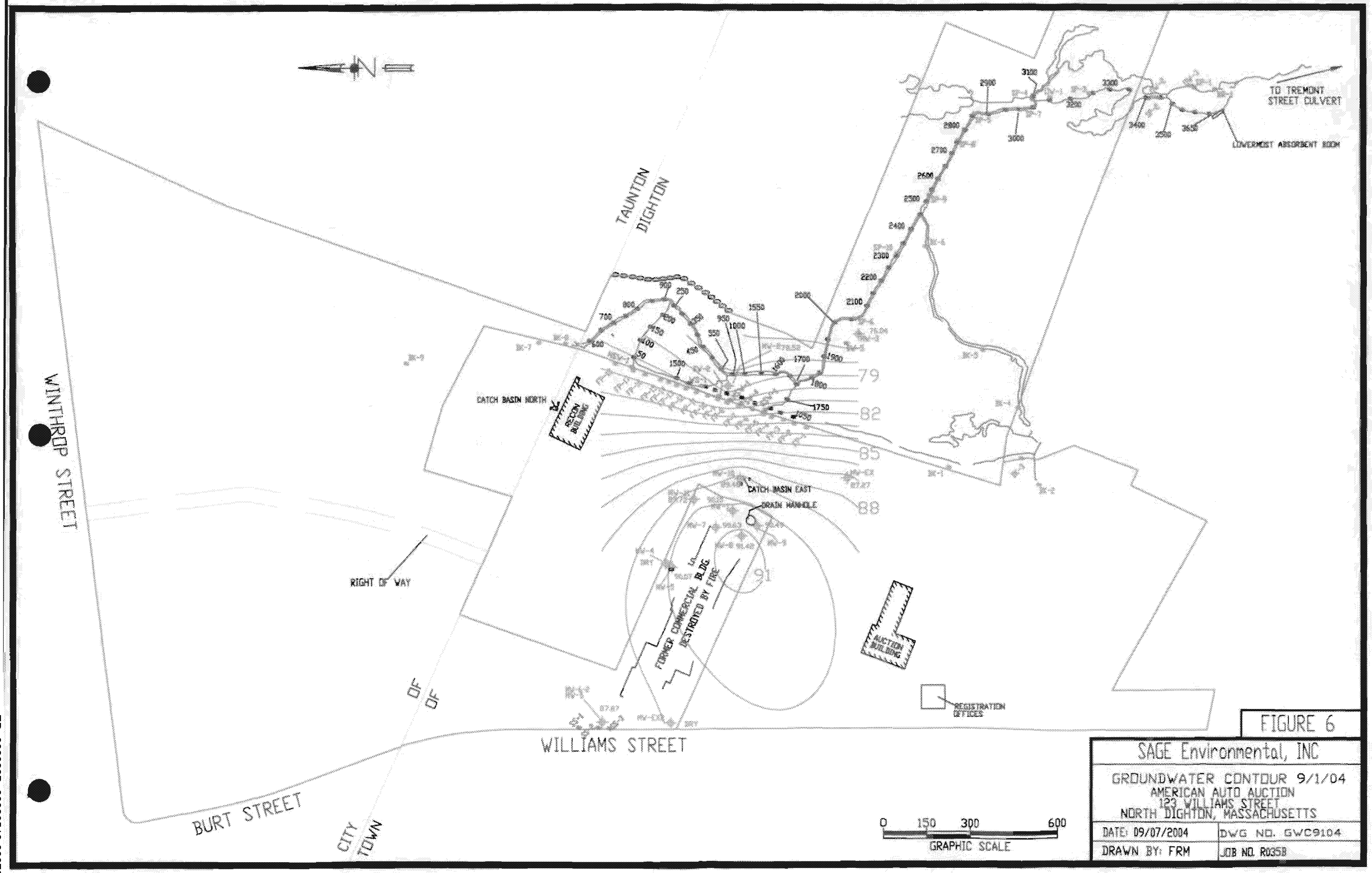


FIGURE 6

SAGE Environmental, INC

GROUNDWATER CONTOUR 9/1/04
AMERICAN AUTO AUCTION
123 WILLIAMS STREET
NORTH DIGHTON, MASSACHUSETTS

DATE: 09/07/2004	DWG NO. GWC9104
DRAWN BY: FRM	JOB NO. R0358